NewTek

TriCaster

40 Version 2

USER GUIDE

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1   INTRODUCTION

Thank you for purchasing this NewTek™ product! Your TriCaster™ 40 belongs to a large family of video systems and software with a remarkable heritage. NewTek is very proud of its record of innovation, design excellence, and product support, and we want you to enjoy the very best experience and value we can offer.

TriCaster™ sets the standard for portable live production systems. It provides a powerful, reliable and efficient platform for live production and web streaming, yet requires very modest space and can be operated by one person.

No matter what your live broadcast ambitions might be TriCaster can help you fulfill them. You can produce and distribute live video programs from diverse sources and materials in both Standard and High Definition.

Use multiple cameras, recorded digital video, PowerPoint® presentations on networked laptops, live web pages, digital photos and graphics, and much more. TriCaster also supports Apple's AirPlay® protocol, allowing compatible off-the-shelf mobile video devices (such as iPhone® and iPad®) to stream content wirelessly to TriCaster.

Your presentations can simultaneously be displayed by video projectors, television monitors, broadcast by traditional means, and streamed in high quality on the Internet.

TriCaster includes Animation Store Creator™, an immensely powerful add-on application, as well as an integrated version of LiveText, which lets you prepare great live-editable title and graphics pages for your productions. In addition, a number of other great products from NewTek including both add-on software and hardware control surfaces can extend and enhance your productions.

NOTE: Some features described in this Guide – including Animation Store transitions, Animation Store Creator™, LiveText™, progressive session formats, the Export module, some recording formats, White Balance, scopes, certain Multiview layouts and Aux output options, and still more – are exclusive to TriCaster 40 Version 2 (Version 1 users can contact their reseller or NewTek Sales to inquire about upgrading).

This chapter will tell you how to connect, configure and register your new TriCaster™ live production system. You'll discover how to get both audio and video in and out of the system, and to adapt both input and output to suit your production environment and needs.

2.1   CONNECTIONS

Figure 1

Begin by connecting the A/C power cord to the three-prong connections on TriCaster's backplate, and plug the other end into an external power receptacle (see *Hint* below). Continue on to connect the mouse and keyboard to USB ports.

Connect the monitor you plan to use for the interface to a port (DVI or HDMI to suit your monitor) on TriCaster's backplate.

TriCaster's interface requires a minimum screen resolution of 1680x1050 or 1600x1200.

A word about UPS devices:

'Modified sine wave' UPS devices are popular due to low manufacturing costs. However, such units should generally be viewed as being of low quality and possibly inadequate to fully protect the system from abnormal power events..

For a modest added cost, consider a "pure sine wave" UPS. These units can be relied on to supply very clean power, eliminating potential

As for any 'mission critical' system, consider connecting your TriCaster™ and related gear using an uninterruptable power supply (UPS). Likewise, consider A/C "power conditioning", especially in situations where local power is unreliable or 'noisy'.

Surge protection is especially important in some locales. Power conditioners can reduce wear on TriCaster's power supplies and other electronics, and provide a further measure of protection from surges, spikes, lightning and high voltage.

2.1.1 MULTIVIEW

TriCaster's *Multiview* output serves for subsidiary monitoring purposes or perhaps projection applications.

Connecting a display device to one of the unused monitor connectors on TriCaster's backplate is usually all that is needed for the system to recognize it. A variety of *Multiview* layouts can be selected at any time in the *Output Configuration* panel in TriCaster's *Live Desktop*.

Note: Only two of the monitor ports on TriCaster's backplate can be used simultaneously. The port type options available for Multiview will depend on which connection you used previously to connect the monitor the UI. For best results, configure Multiview Output to the native resolution of the external display (monitor or projector) connected.

2.1.2 NETWORK

TriCaster can include screens from networked computers running NewTek's iVGA™ client software, network output from applications such as LiveText™, or Apple® Airplay® media in your live productions. As well, an internet connection can serve for registration and updates, and of course for live streaming purposes.

2.1.3 A/V IO

TriCaster lets you 'live switch' up to four HD (or SD) cameras or other analog inputs, along with internal and network connected sources. You can even mix SD and HD sources. In addition, multiple external audio sources can be added to your program.

Audio and video output options are also quite varied. Aside from *Network* inputs (Section 2.1.2), all external media inputs along with *Program* and *Auxiliary* audio and video outputs are conveniently located on TriCaster's faceplate.

Figure 2

Input and output connectors for upstream audio and video sources are conveniently mounted on TriCaster's faceplate (Figure 2). Connectors are grouped and labeled, making it easy to see what should be connected and where.

VIDEO IN

Cameras or other analog video sources are connected to inputs in the *VIDEO IN* group. Connectors are organized in four columns supplying *Switcher* inputs numbered 1-4. Optional connection types for SD video source include composite, Y/C (S-Video) and component (Y, Pb, Pr). For HD sources, an HD component connection is required.

VIDEO OUT

Two independent video outputs are supplied. These are numbered 1 and 2 in the *VIDEO OUT* group and supply TriCaster's *Program* (PGM) and *Auxiliary* (AUX) video outputs respectively.

Connection types available for Output 1 *(PGM)* are identical to those for video inputs, according to the session (HD or SD). The forma t for Output 2 *(AUX)* is separately configurable. In SD format, its connectors can be configured to supply composite, Y/C or component video.

AUDIO IN

Connect your audio sources using the RCA (cinch plug) and ¼" (6.35 mm) TRS jacks in the *Audio In* group on TriCaster's faceplate.   The ¼" TRS jack (also known as a phone jack) is a mono connector typically used for a microphone. You might supply the RCA connectors from an external mixer or other audio source such as a CD or MP3 player.

AUDIO OUT

The connectors in *Audio Out* are similar, but you'll note that the ¼" jack is labeled PHONES, hinting that it is intended for a set of stereo headphones suitable for monitoring sound.

2.2   REGISTRATION

2.2.1   STARTUP AND WINDOWS® ACTIVATION

Turn on the computer monitor, and push the *Power* switch on TriCaster's faceplate. The *Power LED* will illuminate, and the hard drive *activity light* should flicker as the device boots up. (If this does not happen, check your connections and retry).

1. Click *Next* at lower right.
2. Choose your time zone.
3. Accept the license agreement.
4. Enter your 25-digit key (on some models, the sticker is on the *bottom* of the case).
5. Decline automatic updates (by clicking "not right now").
6. Give TriCaster a distinct computer name for networking.

You can authorize your Windows installation by network or by telephone. If you have connected TriCaster to a network (see Section 2.1.2) with Internet access, this provides the fastest method of activation.

1. Click 'Obtain IP and DNS automatically'.
2. Agree to activate Windows. This activation is permanent, and you won't see these screens again. (Registration with Microsoft is optional).
3. Assign a name to the *administrator* account. You may type your name, company, or perhaps simply "TriCaster".
4. Click *Finish*, and TriCaster will re-start.

2.2.2 TRICASTER LICENSE AND REGISTRATION

On launch, TriCaster presents an *End User License Agreement* dialog. After you accept this, the *Registration* dialog shown in Figure 3 is presented.

If necessary, enter the unique TriCaster *Serial Number* and *Product ID* for your system. TriCaster's video output will show a watermark until the system is registered and unlocked (by entering the *registration code*).

Figure 3

Hint: If the Serial number doesn't appear automatically, and you can't find it on your unit, you can obtain it from the registration webpage mentioned in the next section, or from NewTek's Customer Support Desk (open seven days a week).

You can register and obtain your registration code either by telephone, or online (directly from TriCaster or another system connected to the Internet) as described next.

2.2.3 ONLINE REGISTRATION

If you have connected TriCaster to a network with Internet access, simply click the button under *Step 2* to visit the *Registration* page (http://register.newtek.com) in the *Customer Care* section of NewTek's website, where you will find further directions.

Otherwise, you can visit the registration webpage from another system with Internet access. In either case, after registering on the website, enter the resulting *registration code* into the field provided at *Step 4* of the dialog.

Check your personal area of the site from time to time afterward; among other things, you'll be able to download any free software updates that are made available going forward.

2.2.4   REGISTERING BY TELEPHONE

NewTek's Customer Care center also handles registration requests by telephone, if that is more convenient (when opportunity permits, you should still visit the website to set up your account, allowing you to access to software updates). Please have your *Product ID* (from the Registration dialog mentioned earlier) handy when you call. The phone numbers for Customer Service follow:

> *Telephone:* (US) 1-800-862-7837
> (Outside US) +1-210-370-8000
> *Fax:* 210-370-8001

Note: For Customer Support contact information, please see Section8.5.

2.3   STARTUP AND CONFIGURATION

Figure 4

With TriCaster registered, the *Startup Screen* appears. This is where you configure and manage TriCaster sessions (other *Startup* features are discussed later in this text as they arise.)

2.3.1   ALL ABOUT SESSIONS

When working with TriCaster, you provide certain information about your production environment:

- What broadcast standard is used in your locale? Is it *PAL*, common in Europe among other places, or perhaps *NTSC*, standard throughout North American regions?
- Are you using HD or SD cameras (or a mix of both)?
- How are your cameras connected?

As you continue, you may make other adjustments:

- You might calibrate your cameras using the *Proc Amps*.
- For any greenscreen sources, you will adjust the *LiveMatte* settings for optimal keying.
- You will select output device connection types and settings.
- You might create playlists in *Media Players*.

During the course of your production you may add to the media content available:

- You could grab a series of still images from *Program Output*.
- And capture the network *Stream* output as a file.

The list of adjustments, activities and assets involved in a specific production goes on, but the point to grasp is that the *session* is comprised of <u>all of the above</u>. Best of all, if you do not delete the session you created before a production, all of your media and your session settings too are ready for immediate recall.

When you re-open a session, it's just as if you were continuing the earlier event. Thus, if you return to the same venue another day under more or less similar conditions, simply re-open your prior session and you are virtually ready to go. (Of course, it's the course of wisdom to *test* everything before actually beginning the event.) Naturally, you can create and store multiple sessions, and re-load your sessions to continue working with them.

CREATING AND LAUNCHING SESSIONS

The primary *Startup* screen (the one encountered first after launching TriCaster) is the *Home Page*, which is dominated by an icon ring (Figure 5).

When you click an icon it advances to the front position. For example, the first thing you will likely do on launching a new

TriCaster is create a session. Clicking the *New* icon updates the right-hand pane of the *Home Page* to show session options (Figure 6; multi-standard TriCaster options shown).

Figure 5

Hint: You can also use the keyboard's left and right arrows to cycle through the icons.

Select your local video standard (multi-standard model, select NTSC, PAL or NTSC-J) and session format –1080i, 720p, etc. Multi-standard models offer PAL format equivalents.

You will see a default name for the new session above the options pane; click the name to edit it.

Beneath the name is a field labeled *Volume*. Use the menu at right to choose which hard drive the session (and its associated content) is created and stored on.

Note: External hard drives are <u>not</u> recommended for use as session drives.

FORMAT AND OUTPUT CONSIDERATIONS

Remember that for live production, TriCaster can supply SD output (for SD sessions), or both HD and SD in the case of HD sessions. The format of video signal on *Program* and *Aux* outputs varies according to the session type:

- For all *HD* sessions, *Program (Output 1)* output is HD. For *SD* sessions, *Program (Row 1)* output is likewise SD.

Figure 6

- *Aux (Output 2)* – For an HD session, *Aux* output can be configured after launch as either 16:9 or a cropped 4:3 display. SD sessions can be either16:9 or 4:3 aspect, and *Aux* output respects the SD session format in that case.
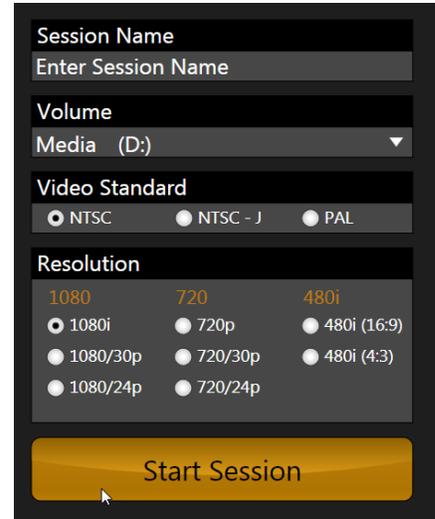
Hint: The session settings determine the video format captured by TriCaster's Record function when capturing Program output (the Aux video stream is independent of session format). Also note that progressive formats are best suited to web streaming purposes.

Having chosen session settings, click the *Start Session* button at lower right to advance to the *Session Page*.

This page has a new icon ring with three icons – *Live, Graphics,* and *Manage*. Click *Live*, and then click *Start Live Production* at right to launch TriCaster's *Live Desktop*.

Figure **7**

THE LIVE DESKTOP

TriCaster's *Live Desktop* is your heart of your live productions. We'll discuss its features later (Chapter 3), but for now we'll just visit briefly.

Until you configure input devices or add content, the *Live Desktop* appears a bit barren. The first thing to do in a new session is to configure your external connections.
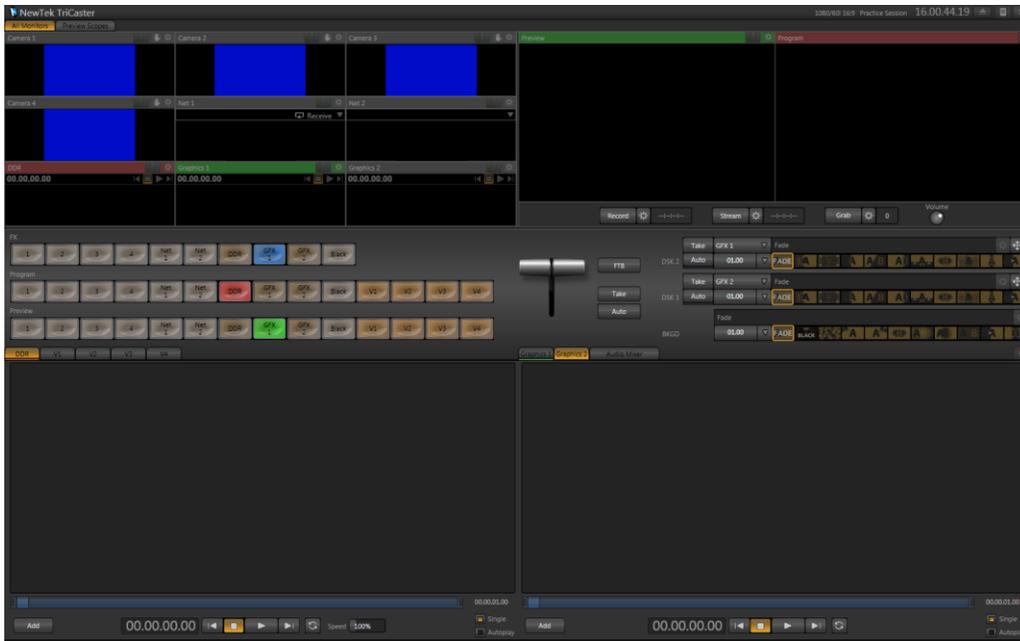
Figure 8

2.3.2 CONFIGURE SOURCES

Figure 9

TriCaster's supports many different live audio and video source types.

Let's consider how to configure these (see Section2.1 for more information on connecting audio and video sources).

VIDEO

Generally, you choose settings for TriCaster inputs and outputs in panels that you open by clicking conveniently located *Configure buttons*, identified by a gear icon (Figure 9). These buttons brighten when you move the mouse near them.

Move your mouse over the monitor for *Camera 1* at upper left on the *Live Desktop*. Notice the *Configure button* which appears at right in the monitor's titlebar. Click this button to open the settings panel for *Camera 1* (Figure 10).

Click the *Connection Type* menu to select the proper format for the camera you connected to Input 1. (You can freely choose SD or HD options in any session.)
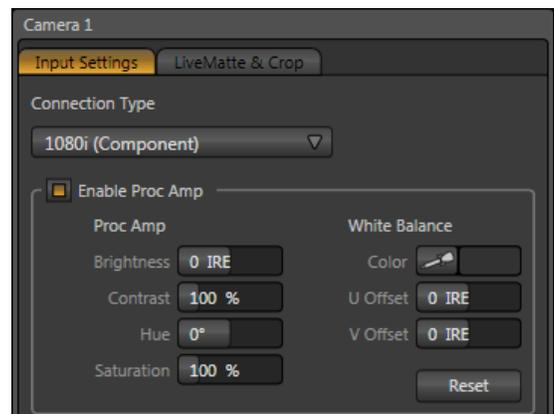
Figure 10

Below this you'll see *Proc Amp* controls that let you adjust the color characteristics of this source. Every TriCaster video source has independent controls just like this. Of course internal sources, such as *Media Players* do not require a *Connection Type* setting.

Hint: Network sources are selected right in their monitor's titlebar, for quick access.

WHITE BALANCE

The *White Balance* controls in the Proc Amp group make it easy to quickly achieve a pleasing color balance.

Figure 11

- The U portion of the video signal carries the blue and yellow color information. Rotate *U Offset* clockwise to shift the signal toward blue and counter-clockwise to shift the signal toward yellow.

- The V portion of the video signal carries the red and green color information. *V Offset* clockwise to shift the signal toward red and counter-clockwise to shift the signal toward green.
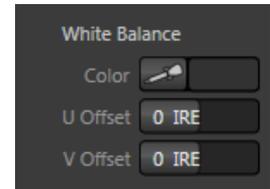
To automatically white balance – click and hold the mouse button over the *Color* (eyedropper) button, and then slide the pointer over the monitor for the corresponding source. Release the mouse button over a part of the image that should be white.

LIVEMATTE AND CROP

The *Input Configuration* panel has a second tabbed pane labeled *LiveMatte and Crop*. This tab contains settings for TriCaster's powerful realtime keying feature – *LiveMatte*. Every video source has similar controls and can optionally be keyed, then displayed over other content.

Using *LiveMatte* is easy. Click on the *Pick Color* button in the *Matte* section of the panel, and *keep the mouse button depressed*.
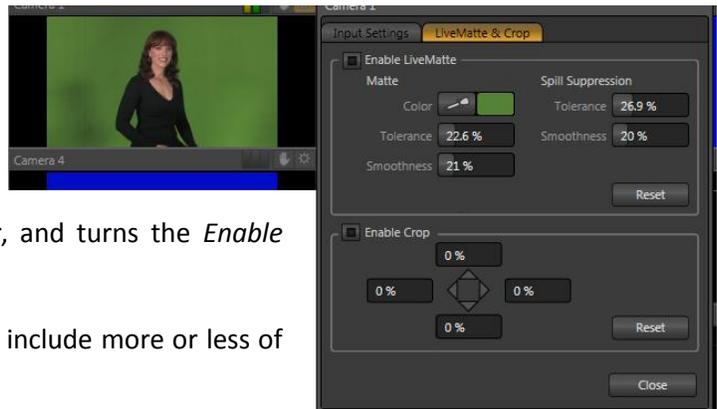
Drag the *eye-dropper* pointer over the green background in the DDR's monitor, and then release it. This establishes the primary key *Color*, and turns the *Enable LiveMatte* switch on.

Adjust the *Tolerance* slider value higher or lower to include more or less of the key color in the matte (transparent region).

Figure 12

15

The *Smoothness* control lets you blend the foreground smoothly into the transparent background.

When overlaying the keyed source on another image, this helps produce a seamless composition.
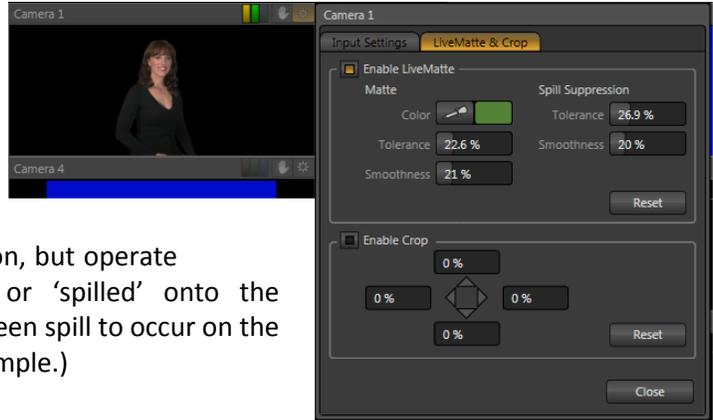
The *Spill Suppression* controls work in similar fashion, but operate on key color that is unintentionally reflected or 'spilled' onto the foreground subject. (It's very common for a little green spill to occur on the shoulders of a person in a greenscreen shot, for example.)

Figure 13

It is also very common for a greenscreen shot to have unintentional inclusions that remain after the base chromakey process is applied, but which need to be removed along with the background. Common examples include microphones or lighting fixtures dangling from above, or perhaps a harsh crease, blemish or tear in the background screen.

> *Hint: Keyed sources are useful in the DSK (Down Stream Keyer) channels on the main Switcher or as layers in Virtual Input compositions. These features are discussed in Chapter 3 .*

The *Crop* tools in this tab can be used to remove such unwanted 'garbage' from the scene, or for other creative purposes. The four numeric controls in this group allow you to define independent margins for the frame. Simply drag the mouse left or right on the number fields to adjust them, or double-click the field to type a new value.

Notice that enabling *Proc Amp*, *LiveMatte*, or *Crop* settings for any source results in an indicator being illuminated in the titlebar of its monitor. Click these 'lights' to toggle the feature on or off without opening the larger configuration panel.

Figure 14

Configure all connected external video sources in this manner. Afterward, you should be able to view them on their respective input monitors.

AUDIO

Audio input configuration is similar. Click the *Audio Mixer* tab to access the controls for audio *Inputs 1* and *2* along with other audio sources). Generally, consumer devices (such as a CD player or inexpensive audio mixer) deliver 'line level' audio. TriCaster's *Input 1*, representing the two 'RCA' (a.k.a., 'cinch plug') inputs on the front panel is devoted to this type of audio source.

The *Mic* controls govern the microphone (unbalanced, mic level, ¼") input. For this source, a *Trim* knob is provided, allowing you to adjust the nominal level for different microphones. Note that the sound from this input is 'mono-ed' (sent to *both* internal audio channels) by default. After establishing benchmark input levels, use the *Gain* slider knobs (next to the vertical VU meters) to maintain suitable volume for your needs.

> *Note: In digital audio systems, signal levels exceeding allowable values are 'clipped' (uniformly assigned the maximum value), resulting in audible issues. The Audio Headroom setting In Record Configuration allows you to offset input signal levels to provide a safety margin. This greatly reduces the possibility of clipping in captured files. Beyond this, use Trim and Gain controls judiciously to avoid over-modulation.*
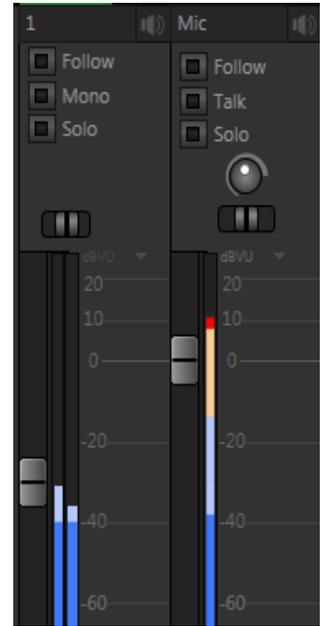
MUTE

Notice that one or more 'speaker' icons appear in the header of each audio control group (Figure 16). These brighten when the mouse pointer is near; clicking them toggles the sound for the associated channel on and off.

Figure 15

Figure 16

FOLLOW

Enabling the *Follow* switch for an audio source directs TriCaster to track switcher operations for the related video source. This results in the audio for this source being completely *muted* until the associated video source is displayed on *Program Output* – whether as the Switcher's *Program* row selection, via *Overlay*, or as *Input A* for a *Virtual Input*. (Audio *Inputs 1* and *2* track *Switcher* operations affecting video *Inputs 1* and *2* when *Follow* is enabled.)

> *Hint: When Follow is enabled for a video source <u>not</u> displayed on Output, the VU meter display is a grayscale, rather than full color.*

TALK AND SOLO

For input two, the control group includes *Talk* and *Solo* switches. *Talk* is an abbreviation of "Talk Over". Enabling *Talk* causes the level for all other audio sources to drop off by 20dB, allowing the 'talk source' to dominate (very useful for public address announcements). Enabling *Solo* for a source sends its (post-fader) sound to the *Headphones* output. This will also remove all non-soloed sources from that output. Solo (i.e., all currently soloed sources) is also an optional source for the *Stream* output.

> *Note: Soloed sources are not affected by Mute, except on Master output. The Solo switch state does not affect Master or Stream audio output,*

MONO AND BALANCE

Mono and *Balance* controls appear for *Input 1* (and other multi-channel sources). Enabling the *Mono* switch centers the audio source on both channels. Center the *Balance* knob to apply gain equally to the left and right channels. Sliding the knob to the left decreases gain applied to the right channel (channel 2) and vice versa.

PAN

Pan — A *Pan* slider is provided for *Input 2* only. Sliding the *Pan* knob left or right actually moves (or 'pans') the audio between audio channels on output.

Figure 17

Hint: In the default center position, the Pan control has exactly the same effect as clicking a Mono switch would produce (this is why a Mono switch is not needed for Input 2.)

NETWORK

Figure 18

TriCaster's network source features are very powerful. You can use NewTek's iVGA client to include displays from networked computers, selected NewTek 3Play™ instant replay systems, or an Apple AirPlay® source (such as an iPad® or iPhone®) in your productions.

Or, connect to a networked laptop running LiveText™, NewTek's powerful realtime title software, letting you assign CG duties to another person.

Note: Gigabit networking is highly recommended, and should be considered mandatory for HD sessions in particular.

TriCaster supports two simultaneous network sources. When TriCaster recognizes a network source it adds it to the *Source* menu located above the *Net 1* and *Net 2* input monitors. Move your mouse pointer over the header of a *Net* monitor and click the triangular button to select a network source. To receive an AirPlay® source, select the first item (marked by an AirPlay® icon).

Some network video sources (notably 3Play output and Apple® AirPlay® video clips) can include embedded sound. The *Net 1* and *Net 2* control groups in the *External Audio* tab (discussed a bit earlier in this section) let you the settings for these audio sources.

2.3.3 CONFIGURE OUTPUT

We discussed video output connections back in Section 2.1.3 but, as for input sources, TriCaster provides configuration controls for its outputs right in the *Live Desktop*.

Figure 19

VIDEO

TriCaster provides several outputs downstream from the *Switcher*. These are *Program*, *Aux*, and *Multiview*. The first two of these are connected to BNC connectors in the *VIDEO OUT* group on TriCaster's front plate. *Multiview* is a supplementary monitoring option supplied by one of the monitor ports on the rear. (See Section 2.1 for more detail on making connections.)

Configuration settings for all three outputs are located in the *Output Configuration* panel accessed by clicking the gear icon at the top right corner above the main *Program* monitor.

Figure 20

OUTPUT 1 (PROGRAM)

We mentioned earlier that the video standard (multi-standard model) and format supplied by the *Program* output is determined by the session setting you decided on (see Section 2.3.1).

For an HD session, the only suitable connection is *Component*. However, SD sessions do support several optional connection types. The *SD Analog Connections* control group in the *Output* tab allows you to choose either *Composite + Y/C* (both can be active at one time, using the appropriately marked connectors in the *VIDEO OUT group*) or, alternatively a single *Component* connection.

AUX

Toward the middle of the *Output* tab, you'll see controls that let you choose the source, screen aspect and connection type for the *Aux* output (labeled *Row 2* in the *VIDEO OUT* connector group on TriCaster's front panel).
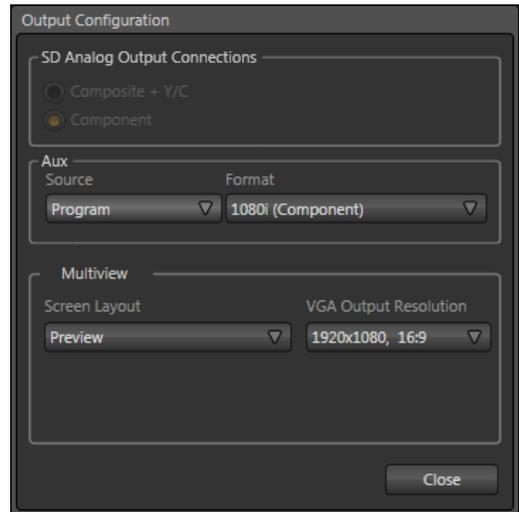
The *Format* menu determines what video format is supplied by the *Aux* output connectors. This setting is independent of session format, and allows multiple formats to be transmitted (and recorded) simultaneously.

MULTIVIEW

The *Output Configuration* panel has another control group labeled *Multiview*. These settings govern the secondary display port on TriCaster's rear panel. You might use this output for subsidiary monitoring purposes, or perhaps to supply a projection system. Controls in the tabbed panel determine what display is shown and what resolution is supplied to the output.

The *Screen Layout* menu provides a number of optional displays, including *Program*, *Preview* and *FX* monitors, along with a number of useful 'multi-bridge' layouts, and a large, highly visible Waveform/Vectorscope option.

Set the *VGA Output Resolution* for *Multiview* to the native resolution of the external device you plan to connect.

AUDIO

TriCaster's audio input and output streams are individually configured using control groups located in the *Audio Mixer* tab.

Figure 21

MEDIA PLAYERS

All three *Media Players* in TriCaster 40 (*DDR, GFX1* and *GFX2*) support playback of common audio file formats such as MP3 or WAV. (The *DDR* also plays video clips with embedded sound). Each player has its own control group in the *Internal Audio* tab. The controls and options for internal sources are similar to those we discussed when considering Internal Audio (Section 2.3.3), so we won't repeat that information here.

STREAM

The audio control group labeled *Stream* lets you control the audio you send to an online audience.

There is a *Source* selection menu at the top of the *Stream* control group. This allows menu you select individual *Media Players* by name, *Internal* (a mix-down of all *Media Player* output), *All* (identical to the *Master* mix), or *Solo* (a mix of all soloed sources only). Other *Stream* controls are the same as those discussed earlier and are familiar by now.
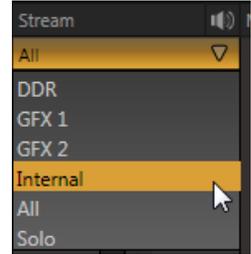
Figure 22

MASTER (AND HEADPHONES)

The *Master* volume slider and associated VU meters relate to TriCaster's main audio output level. Just above these, you'll see a *Balance* slider, and above that again, a knob controlling volume of audio sent to the *Headphone* jack. Generally, the *Headphone* audio mix is the same as *Master*, but as discussed earlier, it is replaced by the *Solo* mix when any sources have that switch enabled.

Figure 23

2.3.4   INTERNET STREAMING

One of TriCaster's great strengths is its direct support for streaming your productions to the Internet, and in turn to a potentially unlimited audience. Online broadcasting can be a simple matter or more complex depending on your needs. Rather than give this important topic short shrift here, we've devoted the entirety of Chapter 5 to the topic.

3   THE LIVE DESKTOP

TriCaster's Live Desktop is really the production hub, home to the all of the controls, displays, modules and tools you will use to create and broadcast your live productions in realtime as events occur.

3.1   OVERVIEW

1 - Monitoring	
2 – Live Control	
3 – Tabbed Modules	
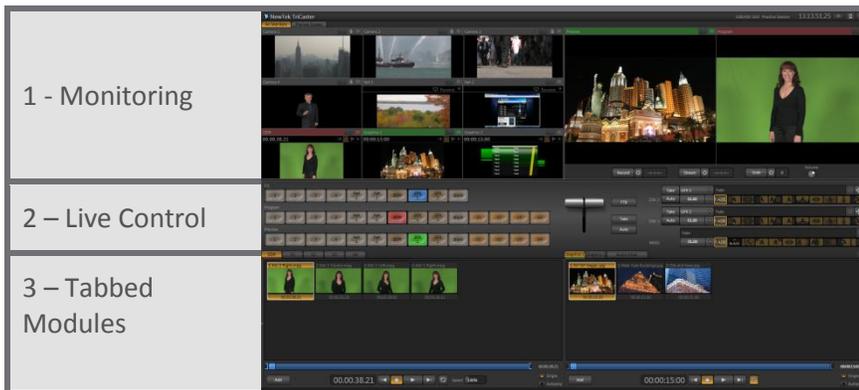
TriCaster's *Live* is divided into three horizontal bands:

> **1 - Monitoring**
>
> • All live inputs, including any network and and internal sources.

> **2 - Live Control**
>
> • *Switcher* rows - FX, Program and Preview
> • *Transition* controls - T-bar, Take, Auto, and video layer configuration and control

> **3 - Tabbed Modules**
>
> • Media Players, Virtual Inputs, and Audio controls

3.1.1   TITLEBAR TIPS

The *Live Desktop* titlebar provides useful data and tools. Displayed info includes:

- *Session Name* and video *format*
- *Switcher Memory* – amount of graphics memory consumed by virtual sets and transition effects
- *Timecode* from the system clock (may include optional Start/End displays) and *Timecode Configure* button (gear)
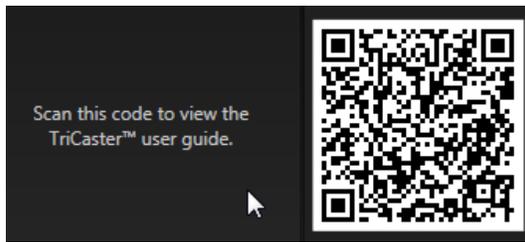
Figure 24

- *QR Code* (Documentation) – click this button and scan a QR code with your mobile device (such as an iPad® or Android® tablet) to download documentation.

- *Eject* (removable storage media) and [x] (Exit button)

STATUS BAR
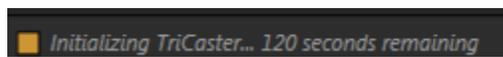
Figure 25
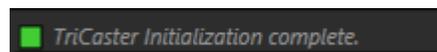
Figure 26

An information display below the titlebar displays system including any cautionary indications.

3.2   MONITORS

By default, the upper third of the *Live Desktop* is covered with monitors. Large full-time *Program* and *Preview* monitors occupy the right half of the upper (monitoring) section. Let's discuss them first.

The *Program monitor* (at right in Figure 27) displays the video output TriCaster is currently sending to downstream devices and ultimately, to your viewing audience.

The *Preview monitor* (at left in Figure 27) displays the output that would result from performing a *Take* operation with the current source selections.

Note that the use of a TriCaster 40CS *control surface* allows multiple sources to be switched simultaneously, using its

Figure 27

Delegate buttons. The *Preview* monitor display respects multi-delegate selections, too. We'll discuss *Preview* again momentarily in the context of switching (Section 3.3). The *Preview* monitor shows interactive *Proc Amp* (etc.) indicators when appropriate, too, just like those we discussed back in Section 2.3.2.

Beneath these primary monitors are *Stream, Record and Grab* buttons, along with their *Configuration* (gear) buttons and time/counter fields (we'll look at these features in Sections 3.6 and Chapter 4, respectively). A convenient *Master Volume* knob appears under *Program*, too.

Figure 28

By default, the monitoring section at left provides individual monitors for all available video sources, including camera and network inputs and output from the internal *Media Players*.

The header of the monitor for the source currently selected on the Switcher's *Program* row is highlighted in red. The titlebar for the *Preview* row selection has a green tint, while the *FX* source titlebar is blue.

3.2.1 CONTEXTUAL TOOLS

We mentioned the yellow, green and blue titlebar switches (*Proc Amp*, *LiveMatte* and *Crop)* previously – see Section 2.3.2. Additional controls pop-up when you move your mouse

pointer over the onscreen monitors. The controls provided vary according to the source type represented by the monitor. *Camera* monitors show *Freeze* and *Configure* buttons in the titlebar on mouse roll-over.
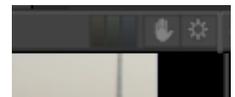
Figure 29

 Other controls appear if you roll-over the onscreen monitor for a *Media Player*. *Stop* and *Play* buttons are supplemented by *Previous* and *Next* (playlist item) buttons.

As well, a timecode field is conveniently situated below the monitor label for *Media Player* modules (Figure 30). Right-click on to open a menu allowing you to *Reverse Direction* for the time counter, show or disable *Warning Colors*, or use the entire *Playlist Duration* for the timecode rather than just the time for the current item.

Figure 30
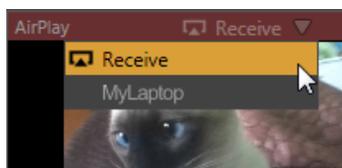
Roll the mouse pointer over a *Network* monitor and *c*lick the triangle button to list available network video sources. The menu might list displays from other computers on the network (via iVGA™*)*, an AirPlay® stream, or perhaps the output from a LiveText™ workstation. (Network sources are considered in more depth in Chapter 4).

Figure 31

3.2.2 INTERACTIVE CONTROL

The small video source monitors are actually interactive; click an (unselected) monitor to send it to the Switcher's *Preview* row. Click it again to perform a *Take*, swapping it with the current *Program* row selection, and sending it to *Program Output*. Or *Shift* + click the monitor for the *Preview* row source to perform a *Transition*.

3.2.3 WAVEFORM/VECTORSCOPE
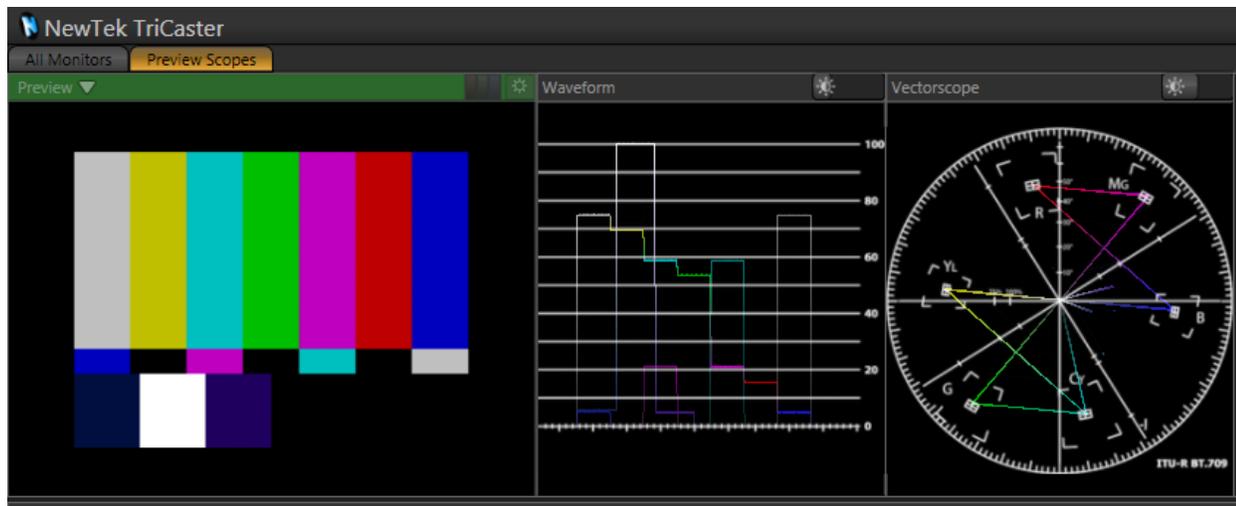
Figure 32

A further and very valuable monitoring tab option is *Preview Scopes*. This selection presents a full color source video monitor along with Waveform and Vectorscope displays. A drop-down menu at upper-left lets you choose whether the current reference source for the scopes (and full-color monitor) is *Preview*, *Program*, or the *FX* row selection.

Hint: When set to Preview, the two scopes and the associated monitor refer to the current Look Ahead Preview composition (including any delegated DSK channels, or FTB) as source. The Program setting likewise monitors the entire Program Output composition (not merely the Program row selection).

The scopes and monitor permit you to judge the effect of *Proc Amp* adjustments. The titlebar for the video monitor shows a *Configure* button (gear) when appropriate. Click it access *Proc Amp* controls for the current source. Titlebar controls above the scopes let you adjust the *Brightness* for their display. Right-click inside the monitor display for either scope to show a menu that allows you to view the trace in full or solid color.

3.3 THE SWITCHER

The central band of TriCaster's *Live Desktop* – between the upper monitoring section and the tabbed modules below – is taken up by the *Switcher* and related controls. These include the *Main Transition* controls, *Local Layer Controls*, and associated configuration features (Figure 33).

Switcher	Transitions	
FX, Program, Preview Selectors	Main Transition Controls	Local Layer Controls
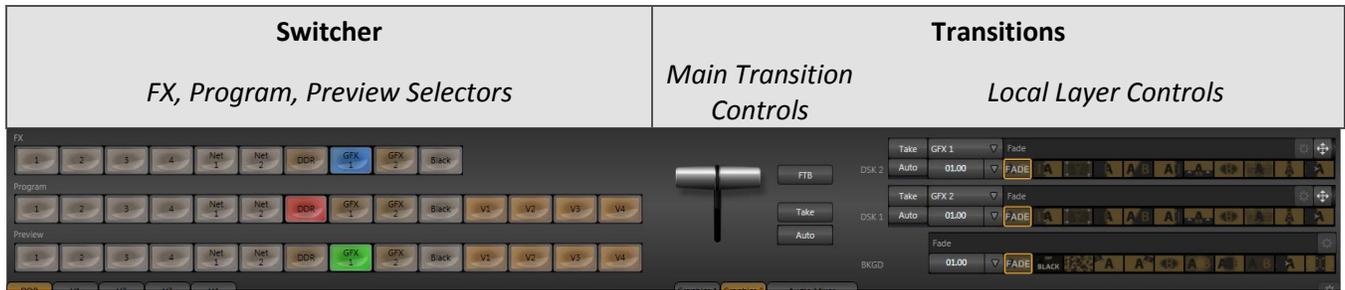
Figure 33

3.3.1   THE PROGRAM AND PREVIEW ROWS

From top to bottom, the three *Switcher* rows are labeled *FX*, *Program* and *Preview*. Clicking a button in the *Program* or *Preview* row selects the active video source for that video layer.

- The *Program row* selection determines the dominant video stream of the *Background* (BKGD) *video layer* – the bottom layer of the composition on *Program* output.

- Normally, the *Preview row* selection determines what is queued up for display in the *Background* layer by the next (BKGD) *Take* or *Transition* operation.

Note: The Program and Preview rows are extended with buttons labeled V1 to either V4. These control display of output from TriCaster's Virtual Inputs (Section 3.8)

3.3.2   THE FX ROW

The *FX* row selection supplies an auxiliary internal video channel which can serve in a variety of ways. For example, it can supply the background scene for a *Virtual Input*, or be assigned to an *Overlay* or *DSK* channel (see Section 3.4).

3.4   TRANSITIONS

3.4.1   VIDEO LAYERS

The concept of *video layers* is central to understanding how TriCaster's *Switcher* and *Transition* controls work together to supply the video seen on *Program Out*.

TriCaster's *Background* layer (often shortened to simply 'BKGD') is always the base for the video composition displayed on *Program out*. In addition to BKGD, three additional 'primary layers' can contribute to TriCaster's final *Program* output:

The *Background* (BKGD) layer supplies the 'bottom-most' video layer, seen behind any other layers shown on *Program Output*.

At any given moment, *BKGD* may consist of a mix of video streams from *Program* and *Preview* rows, or even a more complex composition formed from the numerous sources of one or even more *Virtual Inputs*.

26

- Two overlay layers, *DSK 1* and *DSK 2*, are *c*omposed above the *BKGD* layer on *Program* output. *DSK 2* appears 'in front of' *DSK 1* – that is, closest to the viewer.

- *FTB* (Fade to Black) constitutes a final overlay layer – one that obscures all other layers when applied.

Hint: DSK is short for <u>D</u>own <u>S</u>tream <u>K</u>eyer. DSK layers are typically used for graphics, titles, etc.

With video layers clearly understood, it's easy to comprehend the *Transition* and *Local Layer* controls. We'll consider the latter controls first.

3.4.2 LOCAL LAYER CONTROLS

These tools provide control and configuration options individually for three of the primary video layers – *BKGD, DSK 1* and *DSK 2. Source* menus are located next to the *Take* buttons for each *DSK* layer.

Figure 34

Pressing the local *Take* button for either *DSK 1* or *DSK 2* displays or hides the corresponding video layer (shown on top of the *BKGD* layer).

The local *Auto* buttons for each layer perform similarly, but use the transition settings configured at right for each layer to accomplish the operation.

You can halt an incomplete transition by clicking *Auto* again. For *BKGD* transitions, the *Auto* will be completed the next time you click the button. Re-initiating an incomplete *DSK* transition that is past its midway point completes it; otherwise it is reversed.

Note: BKGD layer transitions are controlled in the Transitions section at left, so local Take and Auto buttons are not provided.

THE TRANSITION BIN

Transition bins (Figure 34) for each layer allow you to pre-select the effect that will be performed next (the active transition is displayed with a gold border). The left-most effect is always *Fade*.

TRANSITION CONFIGURATION

Select an icon in the *Transition Bin*, and then click the *Configure* (gear) button at right above to configure the transition. The first time you click *Configure*, the only entry in the drop-down menu may be *Browse*. Selecting it opens a *Media Browser* to let you choose a transition (see Section 3.5 for *Media Browser* details). The options that appear differ depending on whether you are configuring a *Background Transition* (BKGD layer only) or an *Overlay Transition* (DSK layers).
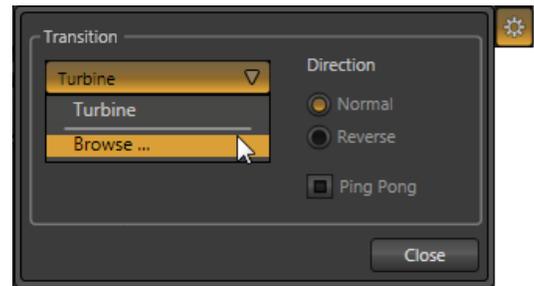
Note: BKGD Transitions and Overlay (DSK) Transitions are slightly different. BKGD Transitions have Reverse and Ping Pong options. Overlay Transitions always Ping Pong, so do not offer direction controls.

Duration menus appear beside the local *Auto* buttons. You can make a *Duration* selection from the menu, drag the mouse pointer left or right over the numeric display to set a custom time, or click the numeric field and type a value.

Figure 36

TRANSITION TYPES

TriCaster provides two main categories of transitions. Standard transitions are simpler, mostly 2D effects that employ transparency and, in some cases, motion, to accomplish the scene change.

Animation Store transitions have full color animated overlays built into them, along with individual sounds for transitioning in and out (transition sounds are optional; also, audio level control is provided in the *Audio Mixer* tab). These special transitions are loaded into Transition Bin slots in the same way as their standard cousins, using the Browse feature. Numerous Animation Store transitions are included with TriCaster. With the included *Animation Store Creator* add-on application, you can generate custom transitions of your own ('ASC' has its own manual: click the *Help* icon in *Startup* to view it).

Figure 37

THE POSITIONER

DSK layers have independent *Position* settings. Click the button marked with a double-headed arrow to open the *Overlay Position* panel. *Position* settings are organized into two sections, *Position* and *Scale*.
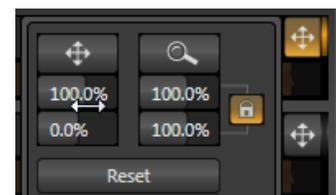
Figure 38

Drag the double-headed arrow to relocate the *DSK* source vertically or horizontally within the frame. Constrain movement to one axis by holding down the *Ctrl* key before dragging, or by dragging on either of the two numeric controls below (click to enter a value by typing if you prefer).

Hint: DSK layers automatically appear (temporarily) on Preview when the Position panel is open. This frees you to tinker with Positioning without disrupting Program output.

3.4.3 MAIN LAYER CONTROLS

Generally, TriCaster's main *Transition* controls (*Take*, *Auto* and the *T-Bar*) behave just like their local sidekicks.

Use the *T-Bar* to control transition progress manually.

Figure 39

FTB (FADE TO BLACK)

Remember that *FTB* (Fade to Black) is effectively the final *video layer* before output, and will hide all other layers when active. Click this button to enable or disable *FTB*.

Note: As a reminder that FTB obscures all other output, the button pulses when FTB is active.

3.5 MEDIA PLAYERS
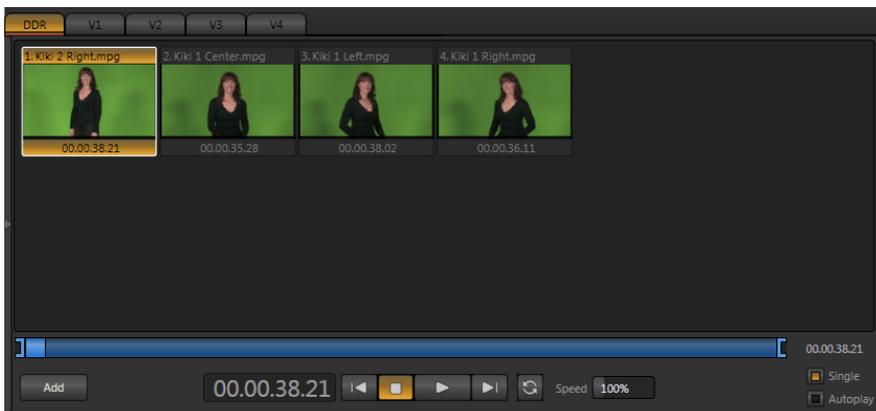
Figure 40

TriCaster's *Media Players* permit you to use clips, stills, title pages and sound files in your live presentations. You can display files sequentially as a playlist, or singly on demand. *Media Players* can even play, stop and advance automatically in response to your *Switcher* operations.

Three different *Media Players* – the *DDR*, *Graphics 1* and *Graphics 2* – are located in tabbed panes at the bottom of the *Live Desktop*. The main difference between *Media Players* is the file formats they play. Supported media types include:

- Video clips (including animations)
- Still images – photos, graphics, etc.
- Title Pages – 'live editable' CG pages (.cgxml files) from TriCaster's integrated title system
- Audio files – standard .wav or .mp3 files, and other common audio file types

Hint: All Media Browsers support most popular 32bit file formats (that is, files with an embedded 'alpha', or transparency, channel).

The *DDR* (*Digital Disk Recorder*) can play all four of the file types listed in the previous section. It is unique in being the only *Media Player* to play video clips. *Graphics 1* and *2* can play all supported file types *except* video clips. The only other significant difference between the *DDR* and *Graphics* modules is that the latter do not have a *Speed* control.

3.5.1 COMMON FEATURES

Let's look at the features and controls that are common to all *Media Players*.

PLAYLISTS

The dominant feature of all of TriCaster's *Media Players* is a storyboard-style playlist that is used to organize content for use during your live productions. The playlist displays large thumbnail icons for each entry. A scrollbar at right accommodates long playlists. Icons can quickly and easily be re-ordered using the familiar drag and drop workflow.

Figure 41

The playlist can even be altered during playback (if the currently playing item is removed. The filename of each item is displayed above its thumbnail, and its playback duration is shown below. Clicking an item select it, and sets the play position to its *In Point*. *Shift + click* and *Ctrl + click* multi-selection operations are supported. Double-click an icon or click the *Play* button to begin playback.

Note that still images and static title pages added to the playlist are given a duration (the default is 15 seconds). This can be adjusted singly or en masse (for multi-selected icons).

Hint: The duration shown is the play time after any trimming operations, and thus may at times be less than the file length on disk. In and Out markers on the Scrub Bar (below the playlist) show the effect of trimming, and can be dragged with the mouse to edit the n/Out points.

PRESET BIN

Another very useful feature shared by TriCaster's *Media Players* is the *Preset Bin*, which provides quick and convenient access to multiple playlists. Presets also store the state of various *Media Player* controls.

Figure 42

To display the preset bin, roll the mouse pointer to the edge of the screen in a tabbed *Media Player* (or the *Audio Mixer* tab). When you change playlists it's almost as though you are accessing another media player. To populate a new preset, simply click a blank preset icon. Presets are named, and conveniently display a thumbnail image. To modify the name, right-click the preset icon to open a menu, and select *Rename*. Other menu options include *Delete*, *Export* and *Import* (the file will be saved with the extension '.pst').

FILE OPERATIONS

- Click *Add* to open a custom *Media Browser.*

- Drag (appropriate type) file(s) from one module's playlist to another module.

- Right-click in the playlist pane to show a context menu with relevant items from the following list:

  - *Cut*
  - *Copy*
  - *Paste*
  - *Remove*
  - **Rename*

  - *Clone*
  - *Set Duration* (Stills and titles)
  - *Edit Title*
  - *Set Audio Level*

Standard (system) *Cut, Copy, Paste* and *Delete* keystrokes are supported. Un-playable (missing, corrupt, or unsupported) file icons are 'ghosted'.

> Hint: A 'speaker' overlay on the icon's bottom right corner indicates a clip has audio. You can click this control to set the level on a per clip basis, too.

> **Rename* creates a local alias, or 'playlist nickname'. It does not actually change the name of the file on your hard drive. (Roll the mouse over the *Alias* in the icon header to see the filename.)

SCRUB BAR

Just beneath the playlist pane is a full-width *Scrub Bar*. Its width represents the full run time of the selected item. Drag the knob left or right to change position in the file.
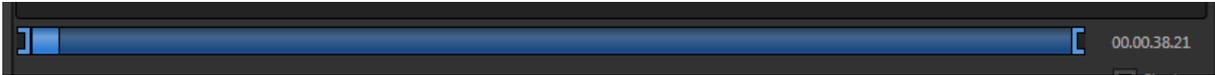
Figure 43

Initially, *In* and *Out Point* handles at opposite ends of the *Scrub-Bar* mark the full limits of the file on disk. Dragging these handles edits the *In* and *Out* points (multi-selections are ignored). The (trimmed) duration is displayed in a timecode field just to the right.

> *Hint: For longer durations, holding SHIFT while dragging In/Out handles increases precision.*

CONTROLS

Transport controls and related features are located directly below the *Scrub Bar*.

Figure 44

TIME DISPLAY

A timecode field displays the *Current Time* for the item. Right-click the timecode to choose *current time* or *remaining time* (*Reverse Direction*), enable *Warning Colors*, or *Playlist Duration.* Or click the timecode type a value, and then press *Enter* to jump to it.

> *Hint: With Warning Colors enabled, ten seconds before the end of play for the current item, the digits in the time display turn amber.   When five seconds are left, the digits are red.*

TRANSPORT CONTROLS

A simple set of controls beneath the playlist pane provides <u>all</u> playback-related functions:

- *Previous* button – go to previous playlist entry
- *Stop* (clicking Stop when already stopped goes to the first frame)
- *Play*
- *Next* button – go to next playlist entry
- (Not shown) – *Double-click* an entry in the playlist pane to begin playback at the start of that playlist entry
- *Loop* – repeat playback continuously (respecting the *Single* switch state)

SINGLE
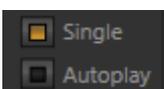
Media Player playback is normally playlist style, each item playing back in succession until all are played. In *Single* mode, playback *stops* when the *Out Point* of the current playlist item is reached (unless *Loop* is also enabled).

Figure 45

The *Autoplay* switch has several important effects. First, it automatically initiates playback when the associated *Media Player* is placed on *Program Out* by a *Switcher* operation (or by displaying the *Media Player* in a *DSK* channel or *Virtual Input*). The reverse transition occurs automatically as the end of play approaches. (In similar fashion, for a media player with *Autoplay* enabled, performing an *Overlay Effect* automatically begins playback.)

Note: The reverse Overlay Transitions do not occur automatically as the end of play approaches.

Finally, if the media player is in *Single* mode, the play position advances to the next playlist item when playback stops.

3.5.2 SPEED
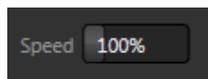
The *DDR* provides a *Speed* control, which supports playback at speeds from 25% to 400% (certain compressed video formats cannot successfully be played back faster than 200%).

Figure 46

Speed can even be adjusted *during* playback. Drag left or right to adjust the *Speed* value, or click the slider to type a new value using the keyboard.

Hint: Press Shift while double-clicking Speed to quickly reset to the 100% default.

3.5.3 ADD (THE MEDIA BROWSER)

Click *Add* or double-click in an empty part of the *Playlist* pane to open the *Media Browser.*

This tool is available anywhere in the *Live Desktop* that you can select content, transitions or effects. The *Media Browser* layout is comprised of left and right panes we'll refer to as the *Location List* and *File Pane* respectively.

Hint: To jump to the system file explorer (rather than the custom Media Browser) from a Media Player, hold keyboard Shift while clicking the Add button.
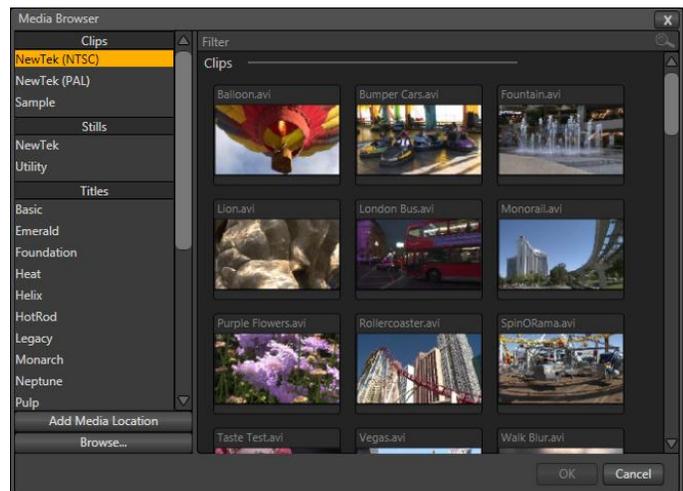
Figure 47

LOCATION LIST

The *Location List* (at left) is a column of favorite "locations", grouped under headings such as Clips, Titles, Stills, and so on. (The *Media Browser* is context sensitive, so the headings shown are appropriate for the current task.)

A list of sub-headings under each main heading in the *Location List* corresponds to sessions, or groups of content. Select a sub-heading to populate the right hand window – the *File Pane.*

ADD MEDIA LOCATION & BROWSE
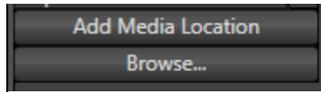
Clicking *Add Media Location* opens a standard system selector. The folder you choose is added to the *Media Browser's Location List* under the heading *My Media Locations*.

Figure 48

Hint: File recursion for listings under My Media Locations is limited to one level below the current sub-heading. Recursion is deeper (infinite) for TriCaster's default locations.

Click *Browse* to substitute open a system file explorer rather than the custom *Media Browser*.

FILE PANE

Icons appear in the *File Pane* for content inside the sub-heading selected in the *Locations List*. (Files are grouped under dividers named for sub-folders.)
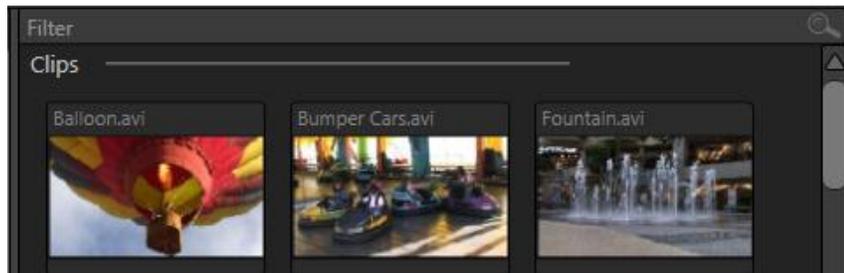
Figure 49

FILE FILTERS

The *File Pane* is automatically filtered to show only relevant content. For example, when selecting *LiveSets*, the browser only shows *LiveSet* files (.vsfx). An editable filter appears above the *File Pane*. Only files matching criteria you enter are shown. For example, if you enter "wav", the File Pane would display any file with the filename extension ".wav" (WAVE audio file format), but also "wavingman.jpg" or "lightwave_render.avi".

CONTEXT MENUS

Right-click a *Location* listed under *My Media Locations* to show a context menu with just one item in it. *Remove* de-lists the location (but does not delete the folder and its contents from the hard drive).

Note: this menu is exclusively for use in the "My Media Location" section, and is not available for other headings in the Location List.

Right-click a file icon to open a menu providing *Rename* and *Delete* options (*Delete* really *does* remove content from your hard drive).

3.5.4 TITLE PAGES

TriCaster™ *title pages* can be used in any of the *Media Players (other than Sound, of course)*. *Media Players* can also display bitmap files exported from third-party graphics applications. However, TriCaster's native title pages can be edited, even while displayed live (not possible with a simple bitmap image).
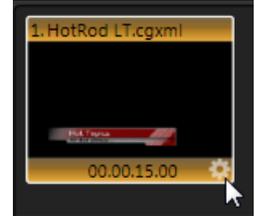
Title page icons display a configuration (gear) button when you move the mouse over them. Click this button or select *Edit Title* in the context menu to open the *Title Page Editor*.

When you move the mouse over text in the *Title Page Editor*, a white bounding-box appears. Click to select the text object for editing. An edit field opens to let you modify the text. Press *Enter* or click outside the box to complete the editing operation.
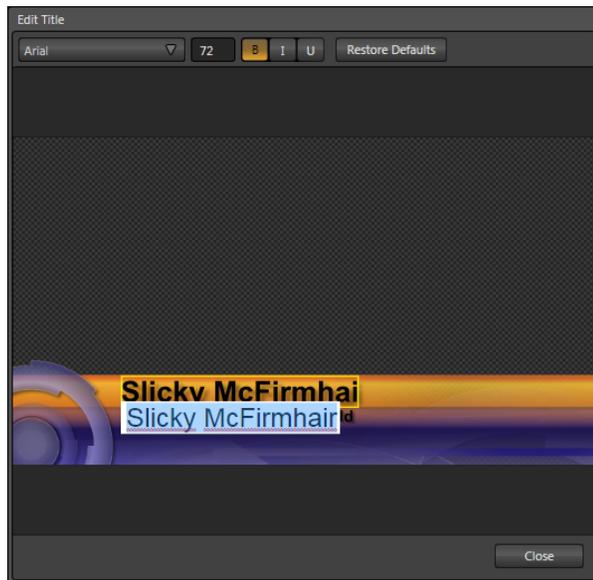
Figure 51

Keystroke shortcuts are available to help you edit a selected text object:

- *Any character(s)* – the current text is replaced by the new character(s).
- *Home* – cursor *before* the first character of the current text.
- *End* – cursor *after* the last character of the current string.
- *Delete* – text input box opens empty
- *Spacebar* – original text replaced by a space character.
- *Backspace* – last character deleted, cursor at the end.
- *Tab* –next field (Shift + Tab, prior field).
- *Up* or *Left Arrow* key – cursor *between* the last two characters.
- *Down or Right Arrow* key – cursor at the end

Hint: A red line under a character or word indicates the spell-checker is questioning its spelling. Right-click to open a menu showing various suggested alternatives

Figure 52

The titlebar of the *Title Page Editor* holds an assortment of text attribute controls. These include a *Font* selector drop-down menu, numeric *Size* control, and *Bold*, *Italic* and *Underline* switches. (See Chapter 6, LiveText, to learn about custom graphics and title page creation.)

Images embedded in *Title Pages* may be locked, or they may be editable stand-ins. When you roll the mouse over an embedded image and a yellow border is displayed around the image, the image is a *stand-in*. Click stand-in images to open the *File Browser*, allowing you to select a replacement image file.

You can find out which, if any images are unlocked (stand-ins) and which are locked, and toggle the status of any image. Hold down the *Shift* key while rolling around inside the *Title Page*. With *Shift* depressed, a red border is shown around any *locked* image under the cursor. *Stand-in* (unlocked) images display a green border on roll-over when *Shift* is depressed. To *toggle* the *stand-in/locked* status for an image, left-click it with *Shift* depressed.

Figure 53

Right-click images to access a menu providing optional methods of fitting the source image to its frame. Choose *Stretch* to completely fill the frame. *Fill Area* retains the interested image's original aspect, cropping if necessary. *Show All Image* also retains the original image aspect, but may result in 'pillar-boxing' or 'letter-boxing' within the target frame.

3.6   RECORD, GRAB

Located immediately beneath the *Program* monitor are *Record*, *Stream* and *Grab* buttons (along with their respective *Configure* buttons). We'll discuss streaming further on, but let's consider *Record* and *Grab* here.
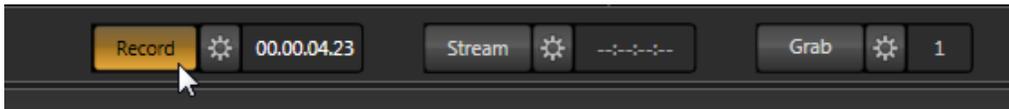
Figure 54

TriCaster provides a great deal of flexibility when it comes to capturing your production. This is very useful for immediate post production purposes or for playback *during* a live production. The *Configure* button (gear) located next to the *Record* button (Figure 54) opens the *Record Configuration* panel (Figure 55).
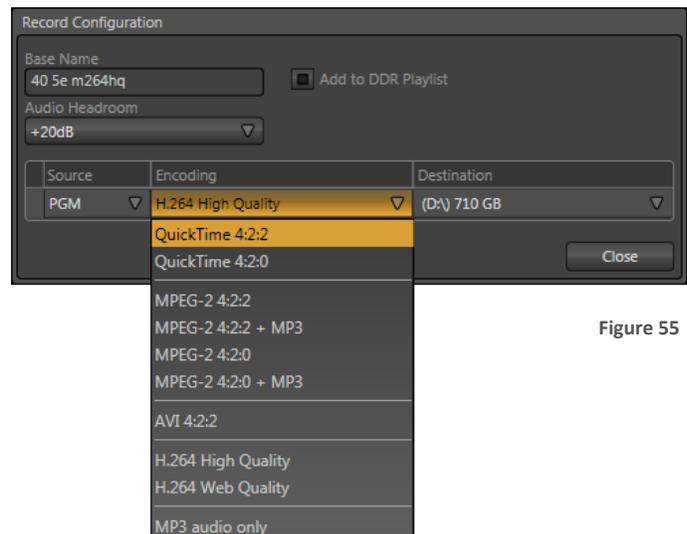
Figure 55

3.6.1   RECORD CONFIGURATION

The *Record Configuration* panel allows you to select which source to capture along with other settings.

The first thing you may want to do is enter a *Base Name* for captured files (this name increments numerically when you start and stop recording).

ADD TO DDR
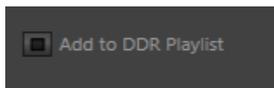
Figure 56

Enable the *Add to DDR Playlist* switch to automatically insert newly captured clips at the end of the *DDR* playlist. These clips are available for immediate playback during your live production.

AUDIO HEADROOM

In digital audio systems, signal levels exceeding allowable values are clipped (uniformly assigned the maximum value), inevitably entailing audible issues.
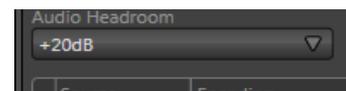
Figure 57

TriCaster's *Record Configuration* panel provides an *Audio Headroom* setting that lets you choose an offset value (in decibels) between 0dB FS (the maximum allowable digital level) and the benchmark 'alignment level'.

> *Hint: When playing files located in TriCaster's default 'capture folders', the DDR adjusts the audio level automatically to produce an improved level match in playlists that include imported sounds or music.*

SOURCE

A drop-down menu labeled *Source* permits you to choose which video stream to capture. TriCaster provides two source options, *PGM* (Program output) and *AUX* (a particularly flexible option, since it can be set to a variety of input sources and formats in *Output Configuration*). Note that direct input selections result in a recording that respects the actual input format where possible, even if that differs from session format.

> *Hint: The FX Source option for Aux is particularly useful in connection with the use of a TimeWarp™ control surface for instant replay applications.*

ENCODING

The *Encoding* option menu allows you to choose between encoding formats for the recorded file. For many purposes, the default Quicktime(R) 4:2:2 format is the best choice, and enjoys wide cross platform compatibility with other software. Note that several options create a separate MP3 audio file in addition to the audio embedded in the captured clip.

In some cases, limitations of third party software may require you to choose the 4:2:0 setting. In addition, TriCaster supports two H.264 quality options. Note that the entry designated *Web Quality* invokes a fixed standard definition, 2 Mbit/sec capture profile suitable for online sharing (i.e., this format is *always* encoded in SD resolution, even in HD sessions).

DESTINATION
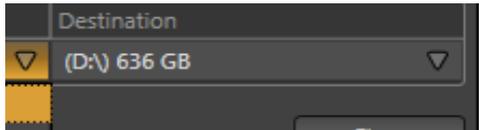
Select drives or other storage volumes as targets for the different recordings using the *Destination* drop-down menu.

Figure 58

3.7   GRAB

At times, all you really want to capture is a still image from the current *Program Output* video stream.   This is the purpose of TriCaster's *Grab* function.   Click the *Configure* button (gear) next to *Grab* beneath the *Program Output* monitor to open the *Grab Still Configuration* panel.

The options presented are similar to those of *Record Configuration*, though a bit simpler.   Again, enter a *Base Name.* The name you supply which will be numerically incremented as required.   Enable the *Add to Graphics* 2

Figure 59

Playlist switch to automatically include newly captured clips at the end of the current *Graphics* 2 module playlist, ready for immediate playback during the live production. Grabbed image files are stored in a folder named for the session, inside the main *Still* folder.
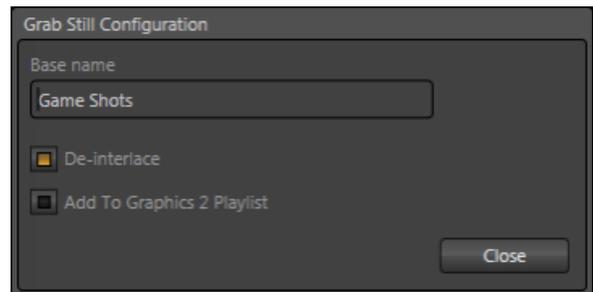
Hint: During a session, the 'grab counter' situated beside the button keeps track of the number of images stored for the current base name entry.

3.8   VIRTUAL INPUTS

Virtual Input buttons sit on TriCaster's *Switcher* rows just like other video inputs, but in fact they possess very powerful features. Much like the M/E (Mix/Effect) rows of a traditional video switcher, they permit a multi-layer composition to be prepared from multiple sources. In addition to the two sources just considered (*Inputs A* and *B*), *Virtual Inputs* provide an integrated *Overlay* channel, as well.

Figure 60

Virtual Inputs support two *primary* video sources. These two sources are labeled *Input A* and *B*. Selection is made using buttons in the lower part of the tabbed panel, corresponding to TriCaster's *Switcher* sources.

When a *Virtual Input* is displayed, *Input A* appears above (or, if you prefer, 'in front of') *Input B* by default. If *Input A* is fully opaque it completely hides *Input B*. However, when *LiveMatte* settings for *Input A* result in transparency, or the *Input A* source has transparency by virtue of being a 32bit file, or its active *Position* settings mean it does not *completely* cover *Input B*, then *Input B* will appear through transparent regions in the result.

3.8.1 POSITIONER
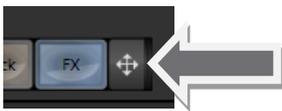
Position controls for both *Input A* and *Input B* appear at right of their respective rows (Figure 61). Click the double-headed arrow button to open the *Positioner*. The panel that opens is identical to the *DSK* layer *Positioner* discussed back in Section 3.4.2.

Figure 61

3.8.2 OVERLAY

Figure 62

Another switcher-style source selector, labeled *Overlay,* is situated right above the *Input A* row. At right Just above that you will also see local transition controls that are quite similar to those found in the Switcher's *Transition* pane. Really, the Virtual Input *Overlay* feature matches the *DSK* channels found in the *Switcher's* main *Transition* section in almost all respects.

Unlike the *DSKs*, though, its inclusion in *Virtual Input* tabs make it a 'pre-*Switcher'* video layer (along with *Input A* and *B*). This means that the *Overlay* is applied before that composition is sent to the *Switcher*. Thus content in a VI *Overlay* appears beneath anything displayed via the two (*Switcher*) *DSK* channels.

The *Overlay* selection and *Position* controls work just like their *Input A* and *B* cousins, discussed earlier (see Section 3.8.1).

3.8.3   LIVESET VIRTUAL SETS

This brings us to the *LiveSet* section of the *Virtual Input* tab. LiveSet allows you to achieve the look of a large, sophisticated studio setting (Figure 64) within a very small studio space (Figure 63) without the need for external equipment.

Figure 63

Figure 64

LIVESET SELECTION

An information line at the top of the *Virtual Input* tab lists the current *LiveSet* (if any) for this *Virtual Input*. The default *LiveSet* simply composites *Input A* over *Input B* (if any part of the image assigned to *Input A* is transparent, *Input B* will show through).

Hint: Many virtual sets require LiveMatte settings to be applied to Input A. Input B does not support keying.

To select a different LiveSet, click the *Add* button at the right-hand end of this field line, opening a custom *Media Browser* (Figure 65).
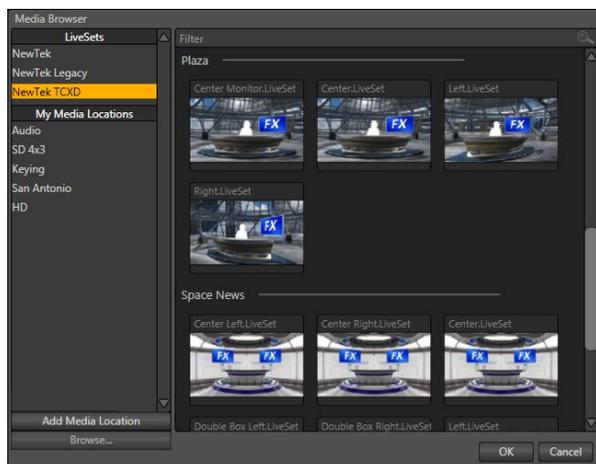
Figure 65

The *Location List* of the *Media Browser* lists any installed *LiveSet* groups under the heading "LiveSets". Select an entry beneath to show thumbnail icons in the Browser's *File Pane*.

VIDEO SOURCES

Virtual Inputs provide *LiveSet* with a new standard of flexibility, allowing you to easily and flexibly assign inputs from the *Virtual Input* tab(s), without Switcher involvement*.

Hint: One special case is when you select FX as a LiveSet input. Conveniently, this allows you to use the Switcher to change the input without either interfering with other common Switcher operations or accessing the corresponding Virtual Input tab.

Figure 66

Virtual sets in the *LiveSet* system display video from either one *or* two different TriCaster sources. It will not surprise you that these correspond to *Input A* and *B*, the primary video sources we discussed earlier. (Again as you might expect, *Input B* is often assigned to secondary purposes, such as to supply the display for a 'monitor' in a virtual set.)

ZOOM PRESETS

Unlike earlier LiveSet implementations, *LiveSet* does not need multiple LiveSets to mimic different 'virtual camera distances' (for a single camera angle). Making a single selection populates four *Zoom Presets* just below (Figure 67).
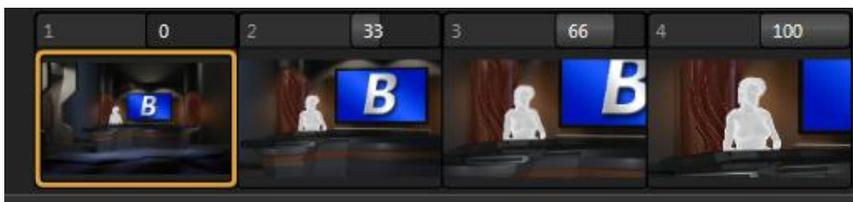
Figure 67

Initially, these four presets represent default stops between the maximum and minimum distance for the specific set - the 'closest' view is 100%. Click a preset thumbnail to jump to the camera view it represents. An active *Zoom Preset* is shown with a gold border (a white border tracks your cursor when selecting presets).

Notice that a numeric slider is provided above right for each preset. These work the same as other numeric sliders in TriCaster's Live Desktop – drag to adjust the value, click to type directly into the field using the keyboard, or press (keyboard) Shift and then double-click to restore the default value for that preset.
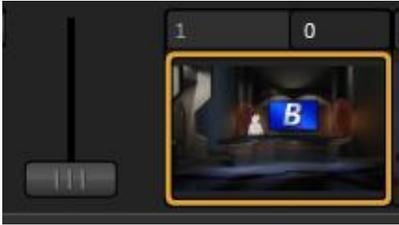
ZOOM T-BAR

The *Zoom T-Bar* is located beside the *Zoom Presets*. Dragging it vertically adjusts the virtual 'camera distance' for the active *LiveSet*, between 0-100%. When you click a *Zoom Preset*, the T-Bar updates to the new zoom level (displayed numerically above). Conversely though, adjusting the *T-Bar* does *not* change the value for a p*reset*. (When the current T-Bar position does not correspond to any presets, none of them are shown with a white border.)

INPUT POSITION

We discussed the *Position* controls for video *Inputs A* and *B* back in Section 3.8.1. It's worth adding here that these controls, when active, do affect the scale, rotation and position for LiveSet video inputs (this is another unique advantage of this LiveSet implementation). You will find that you can often use *Position* controls to ensure a 'good fit' and natural appearance of talent or other source appearing in your virtual sets (greatly reducing the need to fuss with physical camera positions to do so).

ANIMATE ZOOM
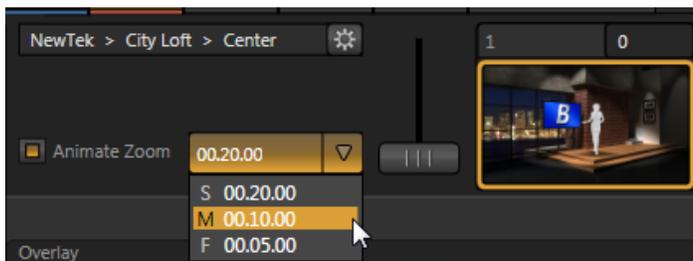
As noted earlier, you can use the *Zoom T-Bar* to manually zoom in on most *LiveSets*, even when displayed on *Program Output*. The *Animate Zoom* switch makes it possible to easily perform this realtime zoom automatically with a single click. With *Animate Zoom enabled*, simply clicking a preset automatically zooms from the current position to the virtual camera 'distance' represented by the preset. A built-in ease in/out is applied to ensure a smooth zoom.

The duration for the animated zoom is controlled by a menu beside the *Animate Zoom* switch. This works just like the similar *Duration* menu buttons in the Switcher's *Transitions* section, providing instant access to three preset durations. Alternatively, click and drag in the neighboring numeric field to set a custom duration – or click the field once more to enter a value directly using the keyboard. The maximum duration for an animated zoom is 120 seconds.

> *Hint: LiveSets each 'zoom in' on a predetermined target. A given group of LiveSets may offer variations on the basic set that allow you to zoom in on an actor at center stage, or a 'virtual monitor' situated on a desk beside the talent, or something else entirely. You will find many creative uses for the different versions of the LiveSet.*

3.9   AUDIO CONTROL

The *Audio Mixer* tab (Figure 70) is home to all of the controls required to manage both audio input and output. Controls are for each individual audio input, source, or output stream, whether external or internal.

Figure 70

External audio connections and configuration were discussed back in Section 2.3.2. These sources include controls for the two analog audio inputs (*Input 1* and *Mic*) along with controls for both *Network* inputs (such as an Apple AirPlay® source).

Besides external audio sources, sounds played from TriCaster's internal storage volumes (including removable media such as external hard drives or 'thumb' drives) via the *Media Players* can be added to the output mix. Separate sub-panels are provided to control audio added to TriCaster's *Program Output* mix by the *DDR* and *GFX* players.

3.9.1 AUDIO LEVELS

TriCaster's analog audio conforms to SMPTE RP-155. The maximum input/output level is +24 dBu. Nominal input level is +4 dBu (-20dB FS), and the sample rate is 48 kHz.

Levels above 0dB are shown in red in the *VU meters*, to caution you that overly high levels can result in clipping in recordings.

Hint: An error message appears in the Status Bar above the main Program output monitor to warn you if clipping occurs.

VU METERS AND GAIN

A large portion part of both audio mixers is devoted to *VU* (Volume Unit) meters. These displays vary depending on the source type. For *Input 1*, the meter displays the levels for the two analog input channels, controlled by a single *Gain* knob, with a *Balance* control above. Other sources may display a single channel VU meter.
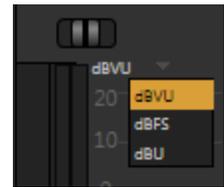
Figure 71

Confusion can sometimes arise because different calibration scales are common in various audio realms and even for different device types and software. Typical analog mixers show levels on VU scales indexed in dB VU, which places the nominal operating level at 0dB. In contrast, editing software and digital devices commonly display levels in dBFS (Full Scale) indexing, with 0dBFS – the maximum signal that can be recorded – at the top of the scale.

TriCaster's VU meters have user-configurable indexing, and default to showing analog inputs using a traditional dB VU scale, and meters for digital sources calibrated in dB FS. The calibration shown for any individual meter can be changed to suit a need or preference.

Click the label above the current scale to open a small menu offering three options as follows:

- *dBVU* – most familiar to users of typical analog audio mixers

- *dBFS* – dB 'Full Scale' – the digital standard; see notes under the heading.

- *dBu* – based on a voltage of 0.775 VRMS (a shy scale rarely seen in public, supplied for completeness, comparison, and the amusement of audiophiles)

Whatever scale you choose to use for your different VU meters, the key thing is to use *Volume* controls (and, for the *Mic* input, the *Gain* control) to avoid over-modulation.

OUTPUT CONTROLS

Each of the audio sources discussed earlier provides its own contribution to TriCaster's audio output mix. Settings in the output control panels in take effect downstream from all sources, further governing audio levels sent to TriCaster's different output sections, including headphones and the Internet stream.

The main *Program* outputs (labeled *PGM* on TriCaster's faceplate) are controlled by the *Gain* knob and *Balance* control in the *Master* sub-panel, located at far-right in the *Audio Mixer* tab. Just above this is a simple level control for the *Phones* output.

Hint: Shift + double click Gain knobs to restore their default values (0dB).

STREAM

The *Stream* sub-panel provides a method of independently adjusting (stereo) audio levels sent to the network when streaming is enabled. An important addition to this control group is the *Source* drop-down menu. This allows you to supply sound to the *Streaming* output exclusively from one of the following selections:

- *DDR* – audio from the *DDR* output is sent to the streaming output.
- *GFX 1 or 2* –audio from the corresponding player is sent to *AUX* output connectors.
- *Internal* – All internal audio sources combined.
- *All* –a supplementary program output channel with independent level control.
- *Solo* – only sources with their *Solo* switches enabled are sent to the streaming output.

3.10 DESKTOP OPTIONS

Several very useful options are presented in the *Desktop Options* menu. Open the menu by clicking the gear button at extreme right (just above the large tabbed panes occupying the lower third of the *Live Desktop*).

Figure 72

Enable *Tabs Follow Preview Row for All Inputs* to cause the tabbed control panel for all appropriate sources (*VI*, *DDR*, GFX, etc.) to be displayed automatically when the source is newly selected on the Switcher's *Preview* row.
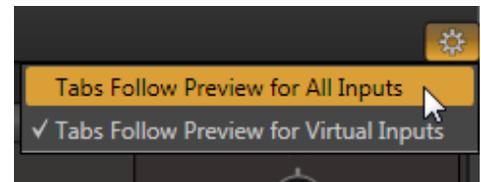
When *Tabs Follow Preview for Virtual Inputs* is checked, the tab shown updates only when you select a *Virtual Input* on *Preview*.

Hint: Control surface operations can sometimes result in a tabbed module that you want to view being obscured because related Desktop Options are enabled. Press the corresponding control surface Delegate button again to re-display the tabbed pane you are interest in.

3.11 SHUTTING DOWN

When your production has ended, click the *Close* [X] button at right in the *Live Desktop* titlebar. This returns you to the *Session page*, where you can manage content from the session, or click the large 'back' arrow to return to the *Home page*.

Once on the home page, click the Shutdown icon and you'll be shown a few options at right, including *Shutdown TriCaster* and *Restart TriCaster,* which need no explanation. Another option labeled *Administrator Mode* provides a number of important functions, discussed next.

3.11.1 ADMINISTRATOR MODE

Selecting *Administrator Mode* from the *Shutdown* menu on the *Home Page* icon ring exits TriCaster's live production environment, reboots, and takes you to a new screen that offers various functions and settings having to do with TriCaster system maintenance and management.

Figure 73

*Administrator Mode o*ptions are grouped under several headings, as discussed next.

BROWSE

- *Web* – Opens the default system Internet browser.

- *Files on Disk* – Opens a system file window.

SYSTEM UTILITIES

- *Register TriCaster* – TriCaster shows a watermark on output before registration, so we encourage you to register early. Among other reasons, doing so will serve to identify the unit to NewTek as yours in case of theft, and will also allow you to check for software updates that may have been recently released. (The steps in the registration process were outlined back in Section 2.2, so we won't repeat them here.)

- *Update TriCaster* – NewTek may periodically provide software updates for your TriCaster. Updates can enhance performance, security or even add useful new features.

  If TriCaster is connected to the Internet, clicking *Update TriCaster* will automatically check for a more recent software version and offer to install it.   This way you can be sure the very latest *release version* of the software for your TriCaster is installed.

  Alternatively, you can go to the NewTek web site, click *My Account*, and use the login details you provided when registering your TriCaster to access your personal product page.   Click the "my downloads" link at the top of the page, and check the list shown.

  If you find an update, you can install it manually as follows:

  1. Locate a suitable update in "downloads" and click on it.
  2. At the dialog popup, choose *Run*.
  3. Comply with any onscreen prompts that follow.

  Advance software releases are also sometime posted on the 'downloads' page for manual download and installation. The versions, listed as "Latest" on the web page, will be newer than the automatic update version, and (although not yet approved for final release) might be well worth trying if you encounter a software issue.

  > *Hint: If you wish, you can instead access the same webpage from a second computer connected to the Internet, then transfer update files to TriCaster using a network connection or perhaps a USB thumb-drive.*

- *Defragment All Drives* – Over the course of lengthy use, the section of TriCaster's internal storage devoted to audio and video storage can become fragmented. Eventually, this can degrade playback performance. Defragmenting corrects this condition.

  > *Hint: Defragmentation can sometimes take considerable time, so it's not something you want to begin just before an important event.*

- *Backup* or *Restore System* – A complete set of *Backup* and *Restore* features are available to help in the event of an unforeseen problem.   We strongly encourage you to protect against any unforeseen occurrence by using the *Backup* feature soon after registering TriCaster.   Please refer to Section 8.3 (Backup and Restore) for details.

- *Command Window* – Open a system command line window, allowing you (among other things) to use advanced commands to manage your system and network settings.

- *Swap Primary Monitor* – reverse the monitor assignments currently in use for TriCaster's interface and Multiview displays.

- *Regions and Language – Open the system language control panel.*

- *Advanced Keyboard – Open the system keyboard controls panel.*

- *Date and time – Open the system keyboard controls panel.*

- *Configure Network – Open the system network controls panel.*

- *Display – Open the system display controls panel (useful for configuring multiple monitors, among other things).*

- *Fonts –Open the system font management console to add a new font.*

- *System Name – It can be very useful to rename your TriCaster, especially when more than one TriCaster might be on the same network. The System Name feature opens the System Properties console's Computer Name tab. Click the Change button to modify the current name.*

SHUTDOWN

- *Exit to Windows* – Leave the *Administration Mode* screen, and display the standard system desktop.

- *Back to TriCaster* – Exit *Administration Mode*, reboot, and return to TriCaster's *Startup* screen and the production environment.

The network source features of your TriCaster™ are very useful.   TriCaster supports two simultaneous network sources, so you can live switch displays from networked computers or appropriate mobile devices as part of your productions.

As discussed back in Section 2.3.2, a number of *Network* sources are directly available for selection on the *Switcher* (and can of course be captured or streamed as well as included in your presentation).

4.1   iVGA

Perhaps you'd like to be able to add Microsoft *PowerPoint*® output, web pages, *Skype*® video calls, application displays or other exotic content to your productions. Using the supplied *iVGA™* client application, TriCaster directly supports such displays (from computers on the same network) by means of the *Network* (1 and 2) sources on the *Switcher*.

4.1.1   iVGA CLIENTS

1. For a Microsoft Windows® client system, copy the iVGA or iVGA PRO application from the *Extras* folder (inside C:\TriCaster) to the sending computer (a readme in the folder explains why you might choose one version over the other in your environment).

    For OS X client systems, copy the appropriate *iVGA.dmg.zip* to your Mac system. Unzip it by double-clicking it; mount the disk image (.dmg file) in the same manner, then drag the iVGA program icon into Applications.

2. Connect TriCaster to the client computer via the local network.

3. Double-click the iVGA icon on the second computer to launch the application.

After agreeing to the NewTek license (and a moment or two for the network connection to be established) the name of the remote computer is added (along any other networked systems with iVGA running on them) to the iVGA client list.

Note: Gigabit networking is highly recommended, and should be considered mandatory for HD sessions in particular.
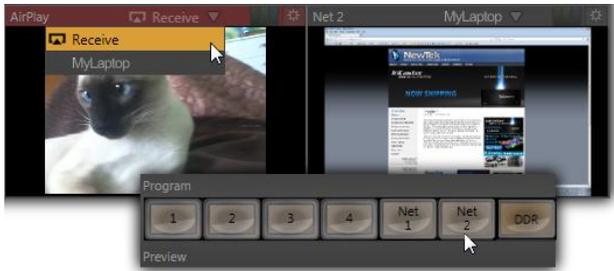
Figure 74

When TriCaster recognizes qualified network sources, it adds them to a drop-down menu for quick selection (Figure 74).

4. Move your mouse pointer over a *Network* monitor in the *All Monitors* tabbed view.
5. Click the triangular menu button above the monitor to select a networked source (or change the current selection) from the menu that appears.

Hint: iVGA places a red-green-blue status icon on the client system. For a Windows-based system, the icon is in the task tray; on Macintosh systems, it is shown in the dock. This indicates this computer's display is ready to send to TriCaster. The icon is animated when iVGA is selected as the active Network source in TriCaster.

Right-click the iVGA icon on the (OS X) dock or (Windows) Task Bar to open a menu with several options, as follows.

OS X

- Engaging *Privacy Mode* prevents the client display from appearing when you don't want it to.
- *Keynote Mode* allows the iVGA client to update the screen even if Keynote® is running. (This also can be used with some games, though the framerate may be quite low.)
- You can set iVGA to show either desktop monitor when you have more than one attached using the *Monitor 1* or *Monitor 2* options in the menu.
- The *Options* list contains settings for *Open at Login*, *Remove from Dock*, and *Show in Finder*.

WINDOWS

- The *Video Source* menu allows you to choose between monitors on a dual-screen system.
- You can also decide whether or not to *Show Mouse Cursor* in the display.
- In the older iVGA version, you can set the transfer speed your network can safely handle directly. iVGA PRO lets you handle this using the quality setting in the menu that opens when you click the gear icon. Gigabit network connections provide the best transfer rates. Slower connections may drop frames, and should be considered unsuitable especially for HD sessions (in extreme cases, where network capability is low or unreliable because of other traffic, *iVGA* would still be useful for static displays).

*Hint: The original iVGA application has a **Lower Hardware Acceleration** option that may help in cases where a client application uses display technology that would otherwise not work with iVGA.*

- In iVGA PRO's *Region* mode, use the marquee to magnify an area of the Windows display, which helps when fine detail is important for an application display on the screen. If you want your zoomed view to move with the mouse cursor, you can unlock the marquee position using the *Follow Mouse* switch in the iVGA PRO control panel (or toggle it with a hotkey — Right Ctrl + Numpad 9).

- *Privacy* mode allows the client some discretion if they need to check e-mail, or perhaps view or arrange something without risk of the audience observing. When selected, this will display a large "Privacy Mode" banner in TriCaster's preview monitors, so the operator is aware this source is temporarily off-line. The client icon also has a 'P' across the face, to remind the client that privacy mode is active.

4.2   LIVETEXT™

As noted earlier, a companion workstation on your TriCaster network with LiveText™ standalone installed can serve as a dedicated CG and title solution for your live presentations.

When running and connected, the LiveText client will be listed in TriCaster's *Net 1 and Net 2* drop-down menus, similar to an iVGA source. For more information on installing and using LiveText, please refer to its manual.

4.3   3PLAY™
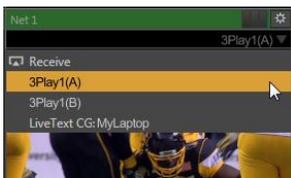
3Play's *Output A* and *Output B* are available as *Switcher* sources to TriCaster. They appear in the source selector menu for TriCaster's *network* inputs as "3Play(A)" and "3Play(B)," where "3Play" is the name for the system.

Conveniently, the output includes embedded audio, freeing up multiple TriCaster a/v inputs for other purposes.

Figure 75

4.4   AIRPLAY®

AirPlay® is Apple's protocol for getting audio and video from 'here' to 'there' – specifically, from an AirPlay source (which may be an Apple® computer, or a mobile device such as iPad®, iPod®, or iPhone®) to a second device.

You select the AirPlay® icon at the top of the *Source* menu for *Net 1* or *Net 2*, just as you would select an *iVGA* or *LiveText* source. (Unlike iVGA, embedded audio with level control *is* supported for AirPlay sources.) TriCaster identifies itself as a network client for AirPlay apps/applications, and you can then designate TriCaster as the output device for content played on the device. AirPlay streams audio, video, or both from the device to the local network, and on to TriCaster.

Here are a few hints that may help if you encounter issues in connection with using AirPlay® sources:

- The first time you connect to a network with the TriCaster, you must choose a network location. This is a standard Windows® process that automatically configures appropriate firewall and security settings for the type of network that you connect to.
  You will be presented with 3 options: *Home*, *Work*, and *Public*. If TriCaster's active network has inadvertently been set to *Public*, AirPlay® will not connect. Be sure this is set to either *Home* or *Work*.

- Make sure you are connected to the correct network, especially for Wi-Fi. iOS® connects to known networks by default. If multiple Wi-Fi connections are available, it may connect automatically to a previously known network. For a wireless AirPlay® source such as iPad®, follow these steps:

  - Tap *Settings > Wi-Fi*. If *Wi-Fi* is off, turn it on by tapping the on/off icon.
  - Available Wi-Fi networks appear under *Choose a Network*...
  - Locate and tap the Wi-Fi network that TriCaster is connected to.

- By default, the Windows® Firewall is disabled on TriCaster. If your AirPlay® device does not recognize TriCaster after enabling AirPlay, make sure the firewall has not been inadvertently enabled. If you must use it, have your network administrator set up an exception for it using the information in the table below:

Port	Protocol	Name
80	TCP	HTTP
443	TCP	HTTPS
554	TCP/UDP	RTSP
3689	TCP	DAAP
5353	UDP	mDNS (Bonjour)

5   STREAMING

<table>
<tr>
<td>**TC**</td>
<td>Live webcasting has dramatically altered the broadcast landscape. Information can be shared among audiences around the world with very small transmission costs, providing many creative and profitable opportunities. When it comes to taking advantage of this new medium, TriCaster™ places you in the forefront of all the excitement.</td>
</tr>
</table>

Internet streaming connections involve a wide variety of attributes. At times, too, account login details may be required for your streaming service (or CDN – content delivery network).

Hint: One of the best approaches when beginning (to stream your productions) is to establish a relationship with a commercial streaming media provider. A good provider can guide you past firewalls, provide public addresses for everyone to view your stream, and provide no end of valuable guidance. And it may not be as expensive as you think. Some services based on an advertising model will even host your stream free.

5.1   STREAMING CONFIGURATION PANEL
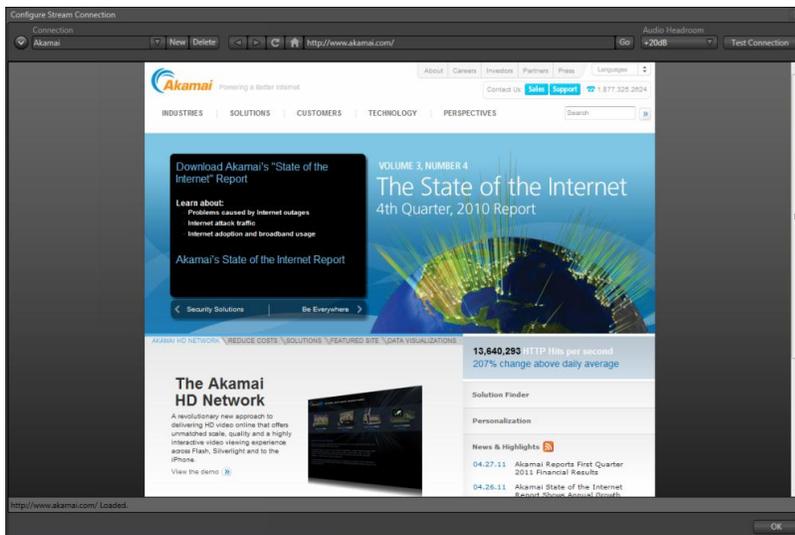
Figure 76

TriCaster's *Streaming Configuration* panel (Figure 76) lets you store configuration settings for a *Connection* in a preset that is easily accessed afterward from a convenient drop-down me.

This panel also has a built-in web browser, permitting you to both view your stream from the remote site (just as your audience will see it) and use webpage based controls as required. To open the *Configure Stream Connection* panel, click the *Configure* button (gear) beside the *Stream* button, just below the *Stream* (on/off) button monitor.

The panel is arranged in three horizontal bands:

1 - Header	
2 – Web Browser	
3 – Footer	
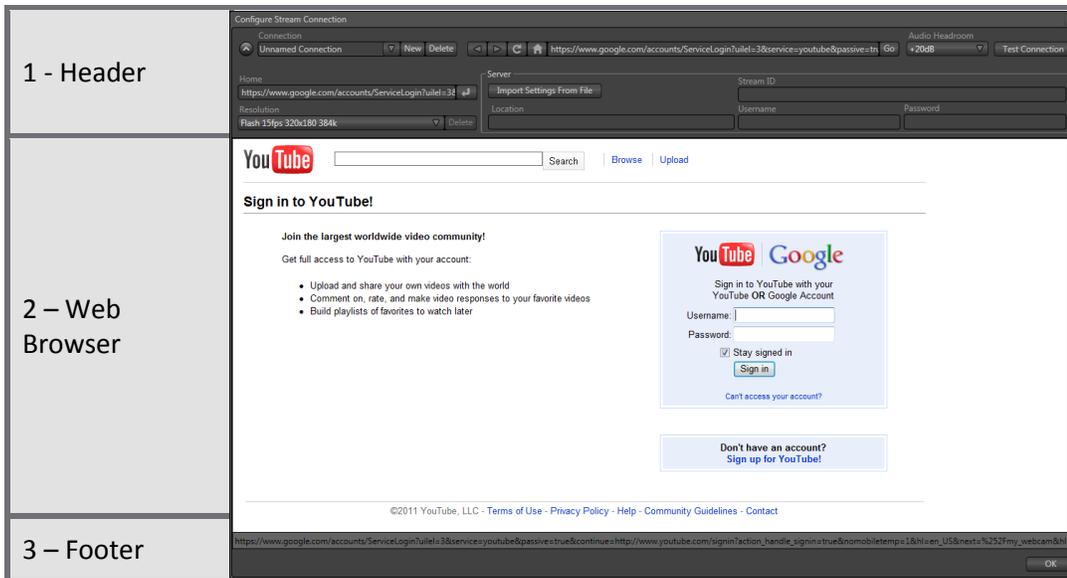
- The uppermost contains controls for creating and managing *Connection* presets, along with familiar web browser navigation tools.
- The large viewport beneath displays the current webpage, if any.
- Finally, the panel's footer contains a status line and *OK* button.
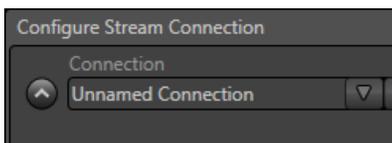
Figure 77

> *Hint: If you like, once you have configured your Connection(s), you can collapse the header to a compact view using the up/down control to the left of the connection name field (Figure 77).*

5.2   WEB BROWSER

A simple set of *navigation controls* (Figure 78) is provided above the *Web Browser viewport*.
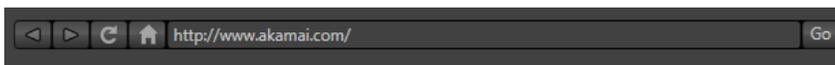
Figure 78

Easily recognizable *Backward*, *Forward* and *Refresh* buttons operate just like those on a typical web browser. The *URL field* allows you to type in a webpage address, and access it using the *Go* button at right.

 The operation of the *Home* button varies a bit from standard browser usage, and a little explanation might be useful.

Figure 79
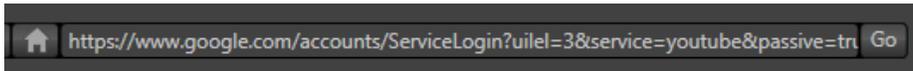
Figure 80

Recall that this is not a general-purpose web browser. It is here to let you access the main account page you use for a specific *Connection*, rather than a 'landing page' for everyday browsing. The *Home Page* for one *Connection* will often be different than that of another.
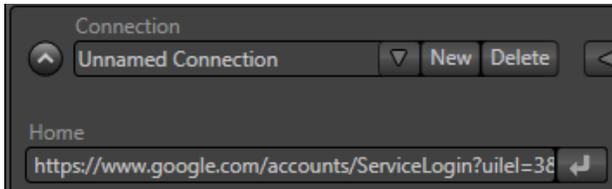
Figure 81

The *URL* field above the viewport always displays the current URL (web page address). A *second* URL field (labeled *Home*) is located below. This is the *Home Page* for the current *Connection*. (To copy the address for the currently displayed webpage into the *Home* field for the *Connection*, click the *Return* button at right of the *Home* field – Figure 81). Afterward, clicking the *Home button* in the *navigation control group* at upper center will return you to this location.

5.3   CONNECTION OPTIONS

The process of configuring a *Connection* (preset) begins with clicking *New* to create it. This opens a dialog entitled *Choose Configuration Type*. The options available are as shown in Figure 82.
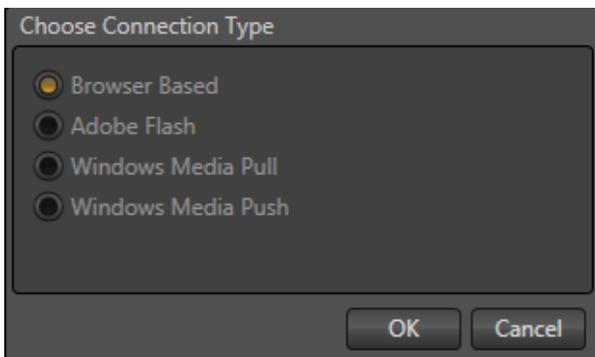
Figure 82

After selecting a *Connection Type* and clicking *OK*, the *Name* field in the main *Configure Stream Connection* panel is highlighted, to encourage you to supply a descriptive name for the preset.

5.3.1 BROWSER BASED

The basic *Browser Based* connection option can perhaps be considered the least demanding approach to streaming, in terms of learning curve for the new operator. The only local setting required beyond the initial *Connection Type* selection is the URL of the *Home* field (see Section 5.2) for the streaming service you intend to use.

> *Note: The steps involved in creating an account with a streaming service provider and configuring the stream vary widely, and cannot be dealt with in depth here. Generally, though, providers offer step by step information and support. And, of course, NewTek's own TriCaster™ forum membership can generally be relied upon for helpful hands-on experience and advice.*

Many of the organizations providing streaming services offer free accounts with limited capabilities and options. This can be just what you need to get started with live streaming. (Many providers also offer paid-for accounts, with benefits including removing ads and advanced streaming options (such as higher bitrate and resolutions or multi-bitrate streaming), two-way live chat, and so-on.

Once configured on the remote site, audition your streaming broadcast by pushing the *Test* button in the *Configure Stream Connection* panel. After leaving this panel, the *Stream* button underneath the *Program Out* monitor on the *Live Desktop* toggles streaming on and off (note that when you start streaming with the *Test* button, then close the *Configure Stream Connection* panel, streaming continues uninterrupted.)

> *Hint: If you do not wish to archive your test stream, disable the Archive File switch (located in the Server control group) beforehand – but remember to re-enable it later if desired. Also, note that some services may show you what they are receiving from TriCaster when you press Test or Stream, but do not actually broadcast that stream until you indicate that you are ready to go 'on air', using controls on the website.*

For *Browser Based* streaming, the encoding of your program into a stream for transmission to the service provider (and ultimately beyond, to your Internet audience) is performed by an applet running on the website. As mentioned before, however, this arrangement often doesn't give you as much control or as many options as you might want. Other *Connection Type* options are more hands-on in this respect, but require you to manually select related settings, as discussed next for each type.

5.3.2 ADOBE FLASH®

TriCaster can encode and stream using Adobe Flash®, and this is a very popular choice.

When you select *Adobe Flash* as the *Connection Type*, the controls presented in the header of the *Configure Stream Connection* panel update accordingly.


Figure 83

56
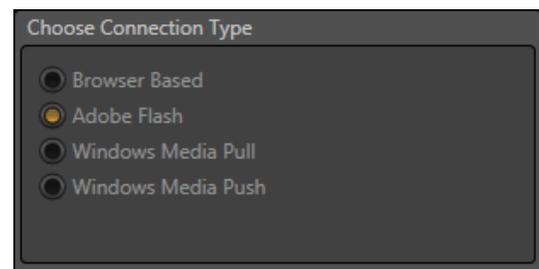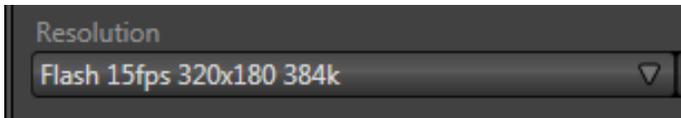
Figure 84

The first thing you might notice is the *Resolution* menu at left beneath the *Home* field (Figure 84). This selector lets you choose from a list of streaming profiles labeled to show their respective frame rate (fps), resolution and bandwidth settings.
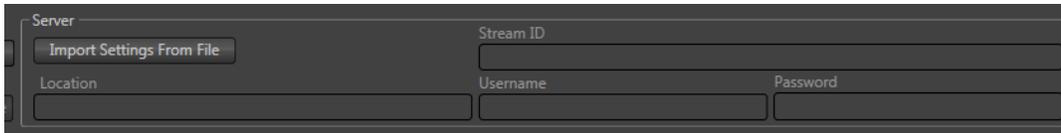
Figure 85

At right is the *Server* control group (Figure 85) where you enter the parameters required by your streaming service (or CDN – Content Delivery Network). Let's consider the information you need to complete this successfully.

The *Username* and *Password* are supplied to you by the streaming service, and are specific to your account.

Location (also referred to as the Server Address) is the address TriCaster will send the stream to (this is supplied to you by the service provider). The *Stream ID* may or may not be provided, depending on the service provider; in some cases you can simply enter a custom ID number.

Many service providers will supply you with a streaming profile in the form of an XML file for use with *Flash Media Encoder*. If this is the case, click the *Import Settings From File* button, navigate to and select the XML file, and TriCaster will automatically import the *Location* and *Stream ID* values for the *Connection*.

Note: By design, the Import feature does not automatically change the Resolution profile you have selected at left. You should ensure that this setting is compatible with your service.

BROWSE (IMPORT A CUSTOM PROFILE)
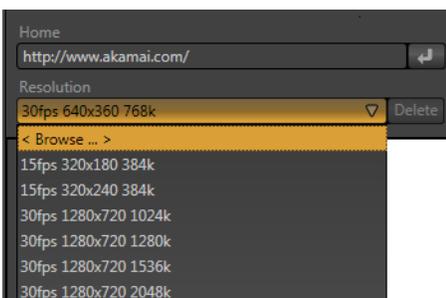
A related function involves the ability to directly import a custom *Resolution* profile. You might create such a profile for a specific purpose, using either the Adobe Flash Live Media Encoder® or Windows Media Encoder® application installed on your TriCaster).

The *Browse* item at the top of the *Resolution* menu (Figure 86) allows you to select an appropriate file in a system file explorer, which is then copied to the correct location for it to be listed in the menu for your use in future.

Figure 86

Note: the nearby Delete button allows you to dispose of unused imports of this type. The default Resolution profiles cannot be deleted, however.

Figure 87

The first time you configure a Flash stream, a webpage applet may pop-up up a configuration dialog (Figure 87) asking you to permit Flash to access your TriCaster audio and video devices. Click *Allow*, and checkmark *Remember*, too. Then click the 'microphone' and 'webcam' buttons, selecting TriCaster's audio and video devices from the drop down menus provided. (If you ever need to open this panel again, you can get to the settings by right-clicking on a flash

5.3.3 WINDOWS MEDIA PULL

If you are streaming internally (to people in your building or inside your own corporate firewall), *Pull* streaming may well provide the easiest approach. (Be aware that since your stream may be constrained by lower bandwidth than a commercial streaming service typically offers, *Pull* streaming may falter when more than a few users are viewing the stream.)

For a Pull *Connection Type*, the *Location* field attempts to automatically display the Internet address you would provide viewers (or your streaming service provider. This the IP (Internet Protocol) address of your computer on the network. This information will be provided as 'punctuated' numeric value.

IMPORTANT NOTE: To avoid malicious external access, routers mask the details of systems connected to them. If TriCaster is connected to the network by a router the IP number in the location field is only valid for viewers <u>on the same side of the router as your TriCaster</u>. This is a local number assigned by the router, not accessible to the world at large. To find out how to provide external access to your stream in this configuration, please see Section 5.5, Diagnostics and Troubleshooting, for information on routers and "port forwarding".

You can provide your clients or streaming providers this address. Entering this address into the File menu of Windows Media Player® (using copy, and pasting it into the Open URL window) will direct the player to show the stream from your system on client computer system(s) connected to the Internet.

Beyond this, simply select a suitable profile from the *Resolution* menu for your need. Once you set up the connection, click *OK* to close the panel. Your live program stream will be sent continuously to the network while the *Stream* button is enabled.

5.3.4   WINDOWS MEDIA PUSH

A Push *Connection Type* is often the most convenient method, especially in cases where TriCaster is connected behind a firewall, as when you need to stream from major venues (such as corporate offices, hotels, or convention centers).

The program stream passes quietly out through any firewalls or routers between the facility and your streaming server. Also, once your streaming provider has provided you the connection specifics, you can resume the stream at any time without intervention from the server. When a *Push* profile is chosen, the *Server* control group updates to allow entry of the (pre-arranged) host web address (*Location*), *Username* and *Password*.

Enabling the *Stream* button then "pushes" the stream from your location, logging into the pre-arranged web address using the username and password you provided. The streaming service then re-transmits your stream for all to see.

5.3.5   BANDWIDTH CONSIDERATIONS

You'll often hear the term 'bitrate' in connection with streaming video. This refers to data throughput per second (measured in Kilobits per second, or Kbps.)

For reliable performance, try to ensure the potential upload bandwidth from your system to the net is around twice the bitrate you choose. You *can* broadcast at a rate closer to your actual ceiling, but reliable performance cherishes headroom.

Even if you can supply good output bandwidth, flow may be constricted elsewhere, such as by the download connection of your audience. A safety margin of around 1.5x the stream bitrate is desirable. This may mean you need to consider using a lower resolution, or lower framerate for your stream – but doing so when required will generally deliver a smoother result (nothing turns viewers off quicker than a stuttering stream).

5.3.6 AUDIO HEADROOM

TriCaster provides an *Audio Headroom* setting that provides the ability to choose how far below 0dB FS (the maximum allowable digital level) to set the nominal level for your streaming audio.


Figure 88

This lets you customize your streaming audio headroom level separately to make sure your audience hears sound at an appropriate level, while still eliminating any possibility of audio clipping in captured streaming files.

5.3.7 OTHER RESOURCES

If you're still struggling with the differences between Push and Pull streaming methods, you can find lots of online resources (in addition to excellent information available in NewTek's user forums!)

The popular web resource Wikipedia® hosts many articles on the subject, notably these two:

http://en.wikipedia.org/wiki/Push_technology and http://en.wikipedia.org/wiki/Pull_technology

Microsoft even hosts an animation on the subject at:

www.microsoft.com/windows/windowsmedia/knowledgecenter/wminaction/streaming_pushpull.asx

(Ignore the detailed discussion of configuring the encoder, and just enjoy the pretty pictures – your TriCaster makes that part easy for you!)

5.4 CAPTURING THE STREAM

Enable the *Archive File* switch in the *Server* control group, and supply a file name in the adjoining field. A folder is automatically created (at D:\Media\Clips*sessionname*\SavedStreams) to receive the captured stream file. (Note, this option is not shown for Browser-based connections since archival service is commonly offered by the CDN in that case.)

Hint: If you're not intent on live streaming, but wish to capture a live switching session, you would likely record at full resolution using the Record button (rather than Stream). The high quality captured files can then be used later in TriCaster's DDR, edited in SpeedEDIT™, or even be transferred to another computer (even on a different platform) for external processing or editing.

Important note: F4V format files written by Adobe® Flash Media Encoder are incompatible with most video playback applications (even those from Adobe). The developer has explained the situation at the URL below:

http://helpx.adobe.com/adobe-media-server/kb/mpeg-4-f4v-files-recorded.html

Unconverted F4V files imported will not play in TriCaster's DDR either. Conveniently, TriCaster can automate the conversion for you to a degree. If you locate the folder named Media\Clips\sessionname\SavedStreams on your primary session drive, you will see the "raw" (unprocessed) streaming file(s) and a batch file (.bat) that can be used to convert all files in that folder. Simply double-click the .bat file to initiate processing. (Note that processing can take some time, so don't do this just before a production.) Output files will be placed in the same folder after conversion.

Hint: The .bat file supports several additional features if employed with command line switches. A readme file located in the same folder provides details of these alternatives.

If you prefer to perform this post-processing on another computer, you can transfer the raw files to it and use the Adobe F4V Post Processor tool, available from the URL below (requires an account to login):

https://www.adobe.com/cfusion/entitlement/index.cfm?event=custom&sku=FS0000522&e=fms35

5.5   DIAGNOSTICS AND TROUBLESHOOTING

Video streaming can involve a lot of different standards and diverse environments. TriCaster gives you the necessary tools, but there are still some common problems you may encounter.

5.5.1   TESTING YOUR STREAM

When it comes to using your TriCaster in a live production environment, failure to test beforehand is not merely unwise - it can be professional suicide. Keep in mind that *onsite* testing under real world circumstances can be very revealing, is most useful when performed well before 'zero hour.' Set up and enable a test program stream from your TriCaster. Can someone outside the local environment connect to it over the Internet? Remember that if you are simply *Pull* streaming from 'behind' a router, the IP number shown in the TriCaster's *Location* field will only be valid for other systems behind the router. You will need to derive the true external IP address to pass to your viewers (or service provider.)

Hint: Again, consider Push streaming with the aid of a Content Delivery Network (a commercial service), as this is generally free of firewall and router woes that often require a friendly system administrator to resolve otherwise.

For Push streaming, you will also need to enable "port forwarding" on the router, as discussed next.

5.5.2   PORT FORWARDING

If you are streaming from behind a router, to preserve a reasonable level of security while allowing outside computers to connect to your system you will need to 'port forward' your router. Port forwarding permits a sort of 'blind hand-off' between external clients (your viewers) and a local transaction port which you manually specify. (The router will pass requests to view the stream through to the TriCaster, without exposing the internal IP routing.)

To enable port forwarding, you need three pieces of information:

- The login information for the router. Your router's manual will have this information, which typically involves entering a specific IP number into your web browsers URL field, and perhaps also a password.
- The specific IP local number that the router has assigned to your TriCaster. You can read this right from TriCaster's *Location* display. It will comprise the entire string of punctuated numbers before the colon (the colon separates the port number you chose for your stream).
- The port number just mentioned (the part *after* the colon).

Although the steps vary a bit by brand and model, generally you would proceed as follows:

1. Log into the router, so it shows its control panel in your web browser.
2. Select the port forwarding page of the router controls. These options may be found in an obscure place, such as the router's "Applications and Gaming" page (since online gaming often requires port forwarding).
3. Enter an *Application* name, if required (this is for your own recognition purposes, so use anything you like).
4. Enter the *Start* and End *port* values – you can use the same port number in both fields, but of course it must be the one you set in TriCaster's *Port* field.
5. If possible, select Both for *Protocol* (or select UDP).
6. Enter the <u>full</u> (punctuated numeric) local IP address shown in the *Location* field of your TriCaster after you enable the stream.
7. Checkmark *Enable.*

Some routers may have other security settings that need to be modified for your Pull stream to be visible from the outside. For example, Linksys® routers may have a setting in its "Security" page named "Block Anonymous Internet Requests". While this may be a great idea normally, it's not going to help much when outside computers want your system to let them Pull the stream.

There are countless makes and models of routers – for information on various models, and a great deal of help on port forwarding generally, we can recommend the following site:

http://www.portforward.com/english/routers/port_forwarding/routerindex.htm

5.5.3 FIREWALLS

You may also run into software firewalls. Generally, these can be configured in similar to permit exceptions to the firewall policy, permitting specific ports or applications to be opened to the world. Information on exceptions in the Microsoft Windows® Firewall can be found in its Help system.

5.5.4 FINDING YOUR EXTERNAL IP NUMBER

Again, the numbers assigned behind your router only work locally. In a Pull scenario, you need to supply the true external IP number (and port) for your TriCaster to viewers outside the LAN (Local Area Network.) You can find this number in several ways. For example, your router will display it as its "IP Address" in its Status page.

Or, you may want to use one of several handy websites that will quickly supply your current IP number (one such is http://www.whatismyip.com). Simply go to the website in your browser and read the IP number from the screen. Append a colon and the port number you are using to this number and you've got everything you need for your viewers to connect.

6 LIVETEXT

LiveText™ is a powerful title and CG application, allowing you to create title pages for use in the Live Desktop's Media Players. Title pages can be still or motion pages, including scrolls and crawls.

LiveText is a full-blown, powerful, professional character generation program also available as a standalone application. It has its own complete manual, which can be accessed from the *Help* icon in the *Session* page of the *Startup Screen* (the source .pdf files are located in the C:\TriCaster\Documentation folder, in case you wish to print them out). In this section, then, we will review matters specific to LiveText when running in as an integral part of the TriCaster™ environment.

6.1 PROJECT FILES

Figure 89

LiveText *projects* are launched from the *Session Page* in TriCaster's *Startup Screen*. After creating a new session (or opening an existing one), click *Graphics* on the icon ring. This reveals options and links at right.

6.1.1 SESSIONS, PROJECTS AND DISPLAY

LiveText uses the current session settings for output to TriCaster's video outputs, new projects (created within the LiveText *File* menu or from the *Session Page*) and bitmap file exports. If you use the File menu to *Open* a project whose settings do not correspond to the current session settings, TriCaster will attempt to display it on its hardware video outputs, if possible.

Hint: LiveText sends output from the canvas to TriCaster's outputs continuously while running. For this reason, the Live Display pane and associated tools that appear at upper-right (above the Pages panel) in LiveText standalone do not appear in TriCaster's integrated LiveText interface.

When LiveText is running, TriCaster's video outputs (rows 1-3) will <u>all</u> conform to the session format. That is, if the project is HD, the SDI outputs will all be HD, and the analog outputs will be Component HD.

Likewise when the project is SD, the SDI outputs will all be SD.   As there are multiple connection options for analog SD video, please refer to the following table in this case:

Row Number	SDI	Analog BNC 1	Analog BNC 2	Analog BNC 3
1	SD	Y	Pb	Pr
2	SD	Composite	Y	C

Note: It is possible to use LiveText's File menu to open a project that does not correspond to the current session settings. TriCaster will attempt to provide video output, but it's possible that a given monitor may not display it correctly.

6.1.2   FILES/FILEBIN

LiveText's file dialogs (for File>Open, File>Add, File>Save and Save As) have pre-configured *QuickTabs* pointing to the following default paths *for the current session*.

Note: the Quicktab links refer to 'session-dependent' paths, thus are not permanent. That is, for a given session, the path the Quicktab refers to is established at launch time. For this reason, the TriCaster version of LiveText does not support user-added Quicktabs.

LiveText's *File* menu has two special items – *Send Current Page to Live*, and *Send All Pages to Live*.   (These take the place of other export options appearing in the standalone version of LiveText.) As you would expect, these functions creates files for use in the Live Desktop, automatically storing them in the correct place(s) for easy access.

Titles prepared in LiveText can be either still or motion pages. When you send a *still* page to *Live*, it becomes a *Title Page* file, with the characteristic filename extension ".cgxml". Title Page files can be edited in the Live Desktop's *Media Players*.   *Send Current Page to Live* will automatically store these files in the D:Media\Titles*sessionname**projectname* folder.

Motion pages (scrolls and crawls) that you send to *Live* are stored as bitmap animation files (with an .avi file extension), suitable for playback in Live Desktop's *DDR*. These are sent to the session folder inside TriCaster's main *Clips* folders. The content of motion pages cannot be edited in the *Live Desktop*.

When you select *Send All Pages to Live,* each page in the project is exported in turn to the appropriate format and location. This means they are readily accessible in the Live Desktop's *Media Browser* afterward, for easy addition to a *Media Player* playlist. Title Page icons will appear grouped under their project names in the Media Browser's *File Pane* when you select the session name in the *Location List* at left.

6.1.3   NAMING STAND-IN IMAGES

Among other things, the *Title Editor* in TriCaster's *Media Players* (DDR, Still and Titles) allows you to substitute a different image for stand-in (or "placeholder") images in *Title Pages* (.cgxml) exported from LiveText.

When creating title pages for this purpose in LiveText, you may find it saves you time to add the string "_placeholder" somewhere in the filename of images you prepare for this purpose. For example, you might name an image "headshot_placeholder.png", or "_PLACEHOLDER_crest.jpg".

Images named in this manner will automatically appear as stand-in images (unlocked) in the *Title Pages* you export to TriCaster using the *Send to Live* options in LiveText's *File* menu.

Hint: Working with stand-in images is discussed in Section 3.5.4.

This chapter will tell you how to connect, configure and register your new TriCaster™ live production system. You'll discover how to get both audio and video in and out of the system, and to adapt both input and output to suit your production environment and needs.

File management features appear in several locations in TriCaster. Since content is generally associated with a specific TriCaster session (see Section 2.3.1), the *Session* page of *Startup* provides a number of related features. A few added file tools appear in the *Live Desktop* and also the *Administrator Mode* screen (see Section 3.11.1).

7.1   MANAGE
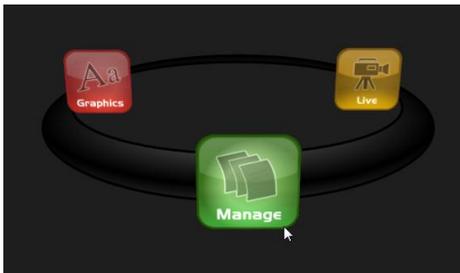
We considered the *Home* page in *Startup* much earlier, when learning how to create a TriCaster session, but skipped over the *Manage* icon on the Session page's icon ring when doing so.

This is where TriCaster's principal file management tools are located. Click the *Manage* icon to reveal the menu list show in Figure 91.

Figure 90

7.1.1   BROWSE

Under the label *Browse*, you will see links to the folders for *Clips*, *Stills*, and other content associated with the session. Clicking a link opens a file pane, which lets you use familiar features (Cut, Copy, Paste, Rename, Delete and so-on) to manage the session content.
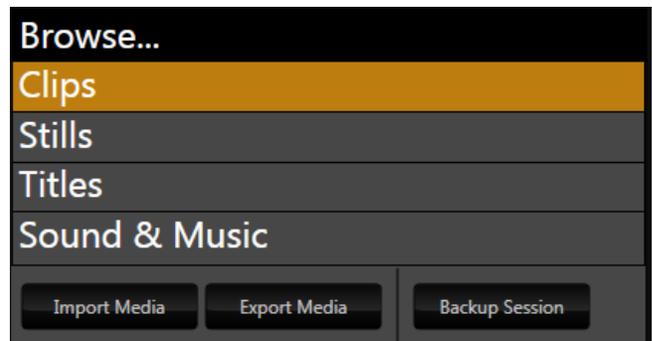

Figure 91

Hint: You can open several folders simultaneously, and navigate to other locations as well. This method can be used to copy captured still images or video files to portable or networked media for external use.

Several other important features are found in *Manage*, including *Import and Export Media*.

7.1.2 IMPORT MEDIA

Clicking *Import Media* opens a custom import panel offering batch import of files for use in TriCaster's *Media Players*. It even allows you to transcode files to appropriate high quality TriCaster-friendly file formats at the same time if you wish. *Import Media's* quick processing makes this the fastest and most convenient way to pre-load a session with production assets.
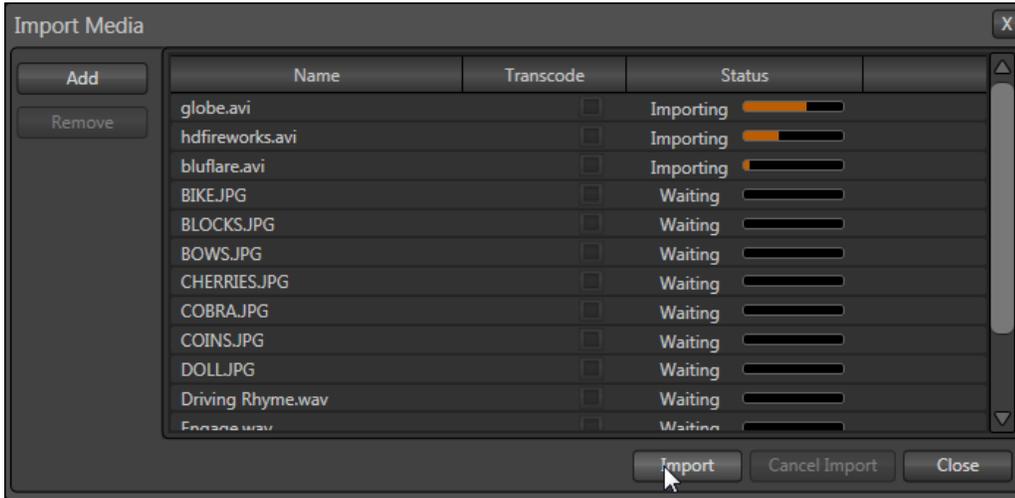

Figure 92

Click *Add* to open a file window, and select (or multi-select) items to build a list in the *Import Media* file pane. Some highly compressed video files may not be well suited to live playback. Enable switches in the *Transcode* column for files you wish to convert to a friendlier format on import. Re-order files by dragging entries up or down, or removed them from the list by highlighting them and clicking *Remove*.

Once the batch import list is prepared, click *Import* to complete the operation. Files are processed quickly, and are automatically added to their proper locations (according to type) for easy access during live production.

7.1.3 EXPORT MEDIA

The *Export Media* function allows you to create a list of video files for export, select a new file format for these exports to be converted to (on a per file basis), and designate where to send them. Clicking the *Export Media* button opens a new pane.
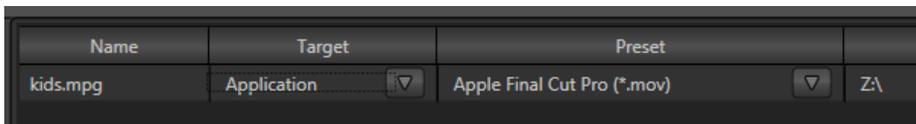
Figure 93

The file pane is a table. It lists all files in the current batch in its first column, and settings for each file in other columns. Click the *Add* button at upper left to open a custom *Media Browser*. You may use either the *Duplicate* and *Remove* buttons to clone or delete selected files from the list. *Duplicate* is useful for exporting to multiple file formats in a single operation.

Having prepared the file list, click the triangle button in the *Target* field to open a drop-down menu listing categories of device or application targets to choose from. Then select a specific encoding *Preset* in the next column. Export presets vary according to what is appropriate for a given session format.

Name	Target	Preset	
kids.mpg	Application ▽	Apple Final Cut Pro (*.mov) ▽	Z:\
Kiki 3 Right.mpg	Application ▽	Apple Final Cut Pro (*.mov) ▽	Z:\
Kiki Rex Center.mpg	Quicktime ▽	DV (*.mov) ▽	Z:\
Rex 1 Center.mpg	Quicktime ▽	DV (*.mov) ▽	Z:\
Rex 1 Left.mpg	Quicktime ▽	DV (*.mov) ▽	Z:\
Rex 1 Right.mpg	Application ▽	DV (*.mov)	Z:\
Rex 2 Left.mpg	Application ▽	DVCPro50 (*.mov)	Z:\

Figure 94

Note: When presets that do not natively support HD are selected during an HD session, output is automatically scaled as required to fit the selected file format. This is a convenience, but be sure to select a Preset suitable for your ultimate needs.

The *Destination* button opens a system file browser to choose a location for file output. Each exported file can have its own *Target*, *Preset* and *Destination* settings. Click the *Export* button at the bottom of the dialogue to begin batch export processing.

Hint: The time an export takes is affected by numerous factors. It is generally unwise to commence a file export shortly before a live event, since you cannot launch TriCaster's Live Desktop during export.

7.1.4 BACKUP SESSION

Clicking the *Backup Session* button opens a file explorer that you can use to assign a storage location for the backup files. Backup operations can take some time, depending on the amount of content in the session. For obvious reasons, then, it would be wise not to begin a major backup operation shortly before a scheduled live production. A progress gauge is displayed during processing, and if necessary you may *Cancel* the operation. Of course, the session to be backed up is the current session (to back up a different session, return to the *Home Page* and *Open* a different session.

The backup operation feature will determine whether <u>all</u> media used in the session is *local* (i.e., located in folders named for that session), or whether some content is *external* – stored in other places on your system, and included in the session using *Add Media Location*, or from folders belonging to other sessions. If all session media is local the backup proceeds without further interruption. When external media is used in the session, a dialog is presented stating "The following files are external to the session. Would you like to import these files?" The optional actions in the dialog are:

- Backup without importing
- Import and Backup
- Cancel Backup

7.2 LIVE FILE OPERATIONS

It is preferable to import content for use in a live session while 'off the air', to avoid interfering with TriCaster's vital access to system resources.   In a pinch, however, remember that you can import media files directly into *Media Player* playlists even during live production, as described in Section 3.5.1. (We do not recommend importing large video clips, either across a network or from external drives).

This chapter will help you keep your TriCaster in tiptop shape, always ready to provide peak performance. As well as covering some utilitarian information, you'll find a few helpful tips in its pages.

A number of useful tools and features are located on the *Home* page in TriCaster's *Startup* section. Others are located in the *Administrator Mode* screen (see Section 3.11.1).

8.1   HELP

Figure 95

Select the *Help* icon to reveal links to open TriCaster manuals. Documentation for optional *Control Surfaces* and *Add-ons* appears here as well.

Click the *License Agreement* link to review the TriCaster license requirements, or the *About TriCaster* link to list software version information, credits and acknowledgments.

8.2   ADD-ONS

As time goes on, NewTek offers additional software to extend the power of your TriCaster.
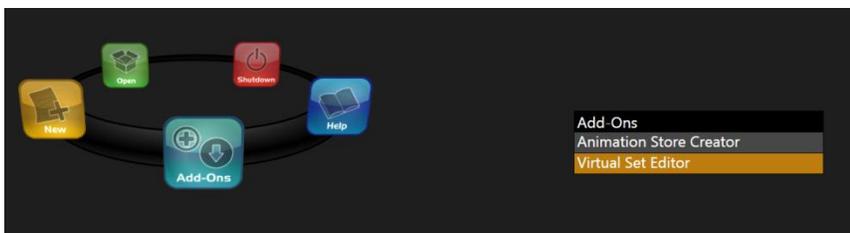

Figure 96

The icon labeled *Add-Ons* on the *Home Page* provides access to these tools. When you select it, links are displayed for installed software applications, allowing you to launch them (for example, Figure 96 shows links to *Animation Store Creator* and the *Virtual Set Editor*™ demo application.

8.3 BACKUP AND RESTORE

This feature provides substantial protection against software issues and even hard drive problems. TriCaster ships with a complete (hidden) restore partition, permitting you to return it to 'as-shipped' state at any time.

In addition, you can create 'custom backups' on another hard drive you connect, effectively cloning the entire system drive. A 'user backup drive' of this type can be accessed by the *Restore* feature later to copy this drive image back to the internal drive should you wish.

8.3.1 CREATE A 'USER BACKUP' DRIVE

The *Backup and Restore* system permits you to create a bootable clone of TriCaster's system drive on another (same size) hard drive connected externally for this purpose. The clone operation includes:

- The hidden, factory-prepared *Restore partition*
- The complete C partition (uncompressed)
- The D partition and its content (uncompressed)

Afterward, the backup drive can be disconnected and stored, to be used later if necessary to i) restore the internal drive should, or ii) in the case of a catastrophic drive failure, to be connected internally (by an authorized technician) to completely replace the original drive.

Note: Since opening TriCaster's case is a breach of warranty, please call Customer Service to obtain direction before proceeding with an internal drive replacement.

8.3.2 RESTORE TRICASTER'S SYSTEM DRIVE?

We firmly expect you will never need it, but isn't it good to know that a complete *TriCaster Restore* function is available in the event of an unforeseen problem? You can use one of two methods to restore your system, depending on your situation.

To restore your TriCaster system software *after the system launches normally*:

1. Click the *Shut Down* icon on the *Home Page* of the *Startup Screen*.

2. Click the *Administrator Mode* link at right to exit the TriCaster environment.

3. In the *Administrator Mode* screen, select the link labeled *Backup or Restore System,* and follow prompts.

If TriCaster should ever fail to boot up properly, you may need to try a different approach to restoring your TriCaster system software, as follows:

1. Select the menu item labeled **Backup or Restore TriCaster** from the black boot screen that appears shortly after powering TriCaster up. (If this screen does not automatically appear, reboot and press F8 a few times in quick succession, say once per second, immediately after powering up.)

2. Follow prompts to complete the process:

   a. If you have previously created a custom backup drive image on another hard drive, you can select *Restore System Partition* from User Backup Drive.

   b. Otherwise, the option *Restore System Partition to Factory Defaults* will overwrite the C partition (only) on the existing system drive from the disk image stored on its (hidden) 'Restore partition'.

      This procedure restores your system drive ("C:") to its 'as-shipped' state. The "D:" drive, which holds content and sessions won't be modified. However any TriCaster software updates (possibly including optional TriCaster expansion packs) will be overwritten, so use this function only if you truly find it necessary (a call to NewTek's excellent *Customer Support* first may often be fruitful; see Section 8.5). When you do restore, remember to update the TriCaster software afterward.

Note: If you restore TriCaster to factory defaults (as opposed to a custom user backup made after system registration), the Windows® system software must be re-activated. To do this, you will need the operating system serial number, which you will find on a sticker affixed inside the front panel of your TriCaster.

8.4   TRICASTER TIPS

8.4.1   USER INTERFACE

- Hold down the keyboard *Shift* key and double-click most controls to reset the associated value to its factory default.
- Numeric sliders often offer increased precision (10x) if you hold down the *Ctrl* key while dragging the mouse pointer over them.
- Remember that the *Desktop Option* menu provides some settings that can make life easier during live operations (Section 3.10).
- Double-click a blank spot in the *Playlist* pane of a *Media Player* to open the Media Browser.
- Shift + double-click as above to use the system file explorer instead.

8.4.2   VIRTUAL SETS

- To restore the default *LiveSet* in a *Virtual Input* tab, click the ellipsis button [...] to the right of the current *LiveSet* name to open the *Media Browser*. Click the "NewTek" heading (beneath the "LiveSets" heading) in the *locations list* at left. Click the *A over B* icon in the "Default" group in the file pane at right.
- An optional, user-friendly, tool called TriCaster Virtual Set Editor is available. This tool makes it easy to modify LiveSets to suit your specific needs. A demo version of this tool can be accessed from TriCaster's *Startup* section by clicking the *Add-Ons* icon.

8.4.3   STREAMING

The streaming profiles shown in the drop-down *Resolution* menu in the *Configure Stream Connection* panel are drawn from the folder *C:\TriCaster\Streaming Profiles*. These files are organized according to whether they are WMV or Flash profiles, NTSC or PAL versions (Multi-standard models only), and finally *4x3*, *16x9* (Standard Definition profiles), and *HD*. (Note that profiles in the various sub-folders only appear in the *Stream Type* List for the *corresponding session type*.)

The easiest method of creating a custom profile is to modify an existing profile and then store it using a new name, using either the Windows® or Flash® media encoder as appropriate.

Note: It is possible to create streaming profiles that place very high demands on system resources, or are impractical for streaming over most networks. The default profiles are suitable for most purposes, and should not interfere with other operations.

IMPORTING A CUSTOM PROFILE USING 'BROWSE'

Flash Media Encoder profiles are XML files, while Windows Media Encoder uses a .prx file extension for its profiles. If you already have a prepared custom profile and wish to import it, follow these steps:

1. Open the *Configure Stream Connection* panel, by clicking the *Configure* button (gear) next to the Stream button on the Live Desktop.
2. Click *New* (Connection)
3. Select the option appropriate to the profile you wish to import in the popup *Choose Connection Type* panel.
4. Click the *Resolution* drop down menu, and slide the pointer all the way down to the bottom to select *Browse*.
5. Navigate to the custom profile, select it and click *Open*.

8.4.4   NETWORK SOURCES

- If you have multiple TriCasters connected to your network, it is very helpful to give them unique names. See Section 2.2.1 for details.
- Although iVGA is highly efficient, it does require *significant* system resources. Do not to install and run the iVGA client software directly on a TriCaster itself.
- iVGA benefits from the fastest possible network connections between remote clients and TriCaster; wherever possible, use gigabit network connections.
- When connecting TriCaster to a network, the operating systems sets the connection to one of three types: Home, Work, and Public. AirPlay® will not connect when the network has been set to Public. Choose either Home or Work. (See Section 4.4 for more tips.)
- NewTek's optional LiveText standalone titling software offers a great way to offload management of titling chores to a second operator using a satellite workstation, and can even connect directly to many sports scoreboard systems.

- NewTek's 3Play instant replay system can send output directly to TriCaster's *Switcher* across a network, freeing up analog video inputs for other purposes.
- Some antivirus software can interfere with certain iVGA PRO features. In such cases, try disabling your protection briefly. If the problem goes away, consider using a different anti-malware product.
- If iVGA PRO's connection to TriCaster seems intermittent, make sure only one network path exists between the two systems, to prevent the PC from switching back and forth between connections.
- Some systems deliberately restrict access to system sound (for DRM reasons), preventing the system 'Stereo Mix' from appearing as an audio source option for iVGA PRO. Several workarounds exist; as a starting point, try an Internet search for terms like "audio loopback software".

8.4.5 IMAG AND LATENCY

"IMAG" is a compression of the expression "image magnification." Typically in modern IMAG applications, video cameras supply live imagery to projection systems, magnifying performers to give audience members in large venues a better view.

IMAG is a very tricky task at the best of times, one that calls for excellent planning, and where possible, testing. Those designing an IMAG installation have, not just one, but *two* inter-related broadcasts to consider –the audio *and* video streams.

If audio and video travelled at the same speed, wherever you were seated in the audience, the sound and video image from the front of the auditorium would reach your ears and your retinas at precisely the same moment. This is not the case, however. Even in relatively small venues sound reaches those in the rear of the audience noticeably later than those in the front, while the image arrives effectively instantaneously.

In this context, "latency" refers to the time it takes for the video signal to transit one part of the IMAG path, from camera lens to final display. It's desirable to keep video latency to an agreeable minimum – but put away any notion of 'zero latency' as being ideal, since this would result in only those *very* near the front of the audience enjoying acceptable lip-sync.

It is common for each device in the production pipeline - even the cameras and monitors - to contribute to the combined total latency. TriCaster's portion is well within acceptable standards for devices of this sort – roughly between 1.5 and 2.5 frames. Here are some points to consider when designing and connecting your system:

- If you use Multiview output from the TriCaster to the projector, match the resolution sent from the TriCaster to the native resolution of the projector.
- Try supplying the projector with analog video.
- Certain projectors provide a 'low latency mode' to disable features of the unit that carry a heavy toll in latency.
- Some cameras include features that add extra latency, such as image stabilization. Disable anything of that sort that you can.
- Latency may be slightly lower for progressive sessions.

8.4.6 THIRD-PARTY SOFTWARE

TriCaster is not a 'general purpose' computer. The installed software suite is finely tuned to provide reliable performance and amazing features. <u>Anything</u> you install apart from official TriCaster updates places these important goals at risk. Doing so is strongly discouraged.

- Some third-party software (such as Adobe® Flash Live Media Encoder) is preinstalled. Do *not* update these packages to newer versions manually. It is quite likely that doing so will have unintended results.
- Virus and malware protection applications can dramatically impact system performance. You should *always* take sensible precautions to avoid introducing infected files into TriCaster by rigorously virus-checking media you plan to connect or import beforehand. If you really feel you *must* install virus protection, switch all 'active scanning' operations off. Then, only when you need to do so (perhaps on a daily or weekly schedule), perform a manual scan.
- Regarding codecs, TriCaster supports the vast majority of popular image, audio and video formats. If a file you would like to use does not play back well (or at all), consider converting it to a friendlier format using TriCaster's Import Media feature (Section 7.1.2).

8.5 CONTACTING CUSTOMER SUPPORT

Visit the NewTek Website, at www.newtek.com and click the *Support* link in the main menu at the top of the page. This page lists the hours of operation and contact details.

In North America, contact Customer Support Monday to Friday from 8:30am to 7:00pm CST, or Saturday and Sunday from 10:00am to 2:00pm CST at the phone numbers or email address below:

- Telephone: (US) 800-862-7837 (Outside US) +1-210-370-8452
- Fax: 210-370-8001)24-hrs day)
- Email: cs@newtek.com

A KEYSTROKE SHORTCUTS

A.1 SWITCHER…

FX Row, Inputs 1 to Input 9	Alt + (1 – 0)
Program Row, Inputs 1 to Input 14	F1 – F12 plus [Shift + F1-F2]
Preview Row, Inputs 1 to Input 14	1 – 0, -, =, and [Shift + 1-2]
FTB (Fade to Black)	Ctrl + b
Transition Overlay 1 On/Off	f
Transition Overlay 2 On/Off	Shift + f
Take Overlay 1 On/Off	d
Take Overlay 2 On/Off	Shift + d
Select Transition (prev/next)	, and . (comma and period)
Select Fade Transition	Ctrl + f
Restore Last Transition	Shift + Ctrl + f
Transition – Slow … Medium … Fast	z…x… c
Transition – Increase Speed	Shift + c
Transition – Decrease Speed	Shift + z
Toggle Reverse Transition On/Off	e
Ping Pong Transition (off/on)	Alt + e

A.2 T-BAR

Take	Return Key
Take T-Bar Back to Top	Shift + Return
Transition … Go/Pause.	Spacebar
Auto Reverse	Shift + Spacebar
Adjust T-Bar… Down/Up	t / Shift + t (faster add Alt)
Halfway T-Bar… Take	h

A.3 VIRTUAL INPUTS

Activate Zoom Preset 1 for Virtual Input selected on Program	Alt + F1
Activate Zoom Preset 2 for Virtual Input selected on Program	Alt + F2
Activate Zoom Preset 3 for Virtual Input selected on Program	Alt + F3

Activate Zoom Preset 4 for Virtual Input selected on Program	Alt + F4
Activate Zoom Preset 1 for Virtual Input selected on Preview	Alt + F5
Activate Zoom Preset 2 for Virtual Input selected on Preview	Alt + F6
Activate Zoom Preset 3 for Virtual Input selected on Preview	Alt + F7
Activate Zoom Preset 4 for Virtual Input selected on Preview	Alt + F8

A.4 RECORD, GRAB & STREAM

Record on/off	r/ Shift + r
Grab (still image)	p
Stream Start	Ctrl + /
Stream Stop	Ctrl + Alt + /

A.5 TABS

Show DDR tab	Ctrl + F1
Show V1-V4 tab	Ctrl + F2-F5
Show Graphics 1 tab	Ctrl + Shift + F2
Show Graphics 2 tab	Ctrl + Shift + F3
Show Sounds tab	Ctrl + Shift + F4
Show Audio tab	Ctrl + Shift + F10

A.6 DDR

Stop	k
Play	l (lower case L)
Go to previous playlist item	j
Go to next playlist item	; (semi colon)
Autoplay On/Off	u
Loop On/Off	' (apostrophe)
Single On/Off	q
Navigate through Playlist items	Up/Down/Left/Right Arrows
Set In Point for current Playlist Item (Clip or Audio file)	i
Set Out Point for current Playlist Item (Clip or Audio file)	o

A.7 GRAPHICS 1

Stop	Shift + k
Play	Shift + l (L)
Go to previous playlist item	Shift + j (J)
Go to next playlist item	Shift + ; (:, colon)
Autoplay On/Off	Shift + u (U)
Loop On/Off	Shift + ' (", quotation)
Single On/Off	Shift + 1 (Q)

A.8 GRAPHICS 2

Stop	Ctrl + k
Play	Ctrl + l (lower case L)
Go to previous playlist item	Ctrl + j
Go to next playlist item	Ctrl +; (semi colon)
Autoplay On/Off	Ctrl + u
Loop On/Off	Ctrl + ' (apostrophe)
Single On/Off	Ctrl + q

A.9 GENERAL

A.9.1 SELECTION AND NAVIGATION

Select All	Ctrl + a
First/Last Item	Home/End
Navigate through Playlist items	Up/Down/Left/Right Arrows
Select All Previous/Following Items	Shift + Home/End
Playlist - select to Top/Bottom	Shift + Home/End
Playlist – add to selection (Up/Down)	Shift + Up/Down arrow

A.9.2 MISC.

Cut	Ctrl + x
Copy	Ctrl + c
Paste	Ctrl + v
Delete	Delete Key

CREDITS

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- NewTek Marketing and Sales
- NewTek Customer Support
- NewTek Business Development

This product uses the following libraries, licensed under the LGPL license (see link below). For the source, and the ability to change and recompile these components, please visit the links provided:

- FreeImage library http://freeimage.sourceforge.net/
- LAME library   http://lame.sourceforge.net/
- FFMPEG library   http://ffmpeg.org/
- For a copy of the LGPL licence, please look in the folder c:\TriCaster\LGPL\

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