



SD PORTABLE LIVE PRODUCTION

USER GUIDE

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TRICASTER™



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PART I (GETTING STARTED)

Introducing TriCaster™ TCSD – connections and registration, a top-level overview of primary features, and a hands-on tour to get you started.

2 ABOUT THIS MANUAL



Hate reading manuals? If so, you are part of the majority (estimates are that between 60 and 97% of the human race concur). Most prefer to jump right in, maybe asking a friend for occasional help (and who can blame them)?

This manual attempts to tell you what you need to know in a friendly, concise way, while also providing a deeper reference section you can turn to when you really need specifics.

If you do hate reading, please take a moment to peruse at least *this* section, which explains the manual's organization. You may find you can escape with a minimum of reading. (Or, if you are a devout reader, you can be the *hero* others turn to for expert advice.)

Part I - Getting Started: introduction to TriCaster; connecting devices (cameras, monitors, etc.) and registration, ending with the Live Production Walkthrough – a brisk jog through fundamentals, about 30 pages (if you're a quick study, this may provide all you need).

Part II – Reference: chapters in this section cover every arcane detail related to using TriCaster – for those who need it, and those who just like to know everything.

Part III – Appendices: leads off with a handy section titled “How do I ...?”, a helpful question and answer section with its own brief index. When you have a specific need, you may well find a quick answer here - along with cross references to more detailed information when appropriate. Appendix E lists all shortcut keys. Part III is also home to a comprehensive keyword index.

3 INTRODUCTION



Thank you sincerely for purchasing this NewTek TriCaster product. TriCaster actually comprises a family of fine video systems and software with a proud heritage. A true video pioneer, NewTek is justifiably proud of its record of innovation, ongoing commitment to excellence and superb product support.

This chapter provides a quick tour of the major components of your TriCaster system.

3.1 OVERVIEW

Welcome to the world of portable live production. With any member of the NewTek TriCaster lineup, you can produce live video programs from diverse sources – including multiple cameras, recorded digital video, PowerPoint, live web pages, high-resolution imagery and much more. Better still, your presentation can be simultaneously distributed to projector, video and the Internet.

Creating live network style television can be very costly, traditionally requiring very expensive equipment and a large crew. TriCaster changes all that. In one small, lightweight, portable system (small enough to fit in a backpack) you have all the tools required to create, broadcast, web stream and project your show. Select models even include live virtual sets (LiveSet™) to give you full ‘network-class’ production capabilities.

TriCaster is the de facto standard for “portable live production” because it is the most complete, reliable and efficient system available for live production and web streaming. Its small footprint makes it possible to broadcast from literally anywhere, and only requires one person to make it work. No matter what your live broadcast goals are, there is a TriCaster perfect for you.

3.2 MEET THE FAMILY

The TriCaster family tree has several branches – the TCSD model lineup, discussed in this volume includes TriCaster STUDIO and TriCaster BROADCAST. TriCaster TCXD models are discussed individually in their own manuals.

As in most families, many characteristics are shared, while others distinguish individual members. Let's take a quick look at the family album, and then we'll explain how this manual is organized.

3.2.1 SHARED FEATURES

TriCaster is a portable production system. At just under 20-pounds and slightly bigger than a shoe box, you can take TriCaster anywhere.

Plug TriCaster in, connect cameras (or other video sources), and freely mix these sources with previously recorded video from an internal Digital Disk Recorder (DDRs are effectively 'virtual VCRs'). Switch using cut and fade transitions, or any one of the included 200+ video effects. Complete and polish your production with opening titles, closing credits and graphics to identify your participants and locations.

- Connect and switch between live cameras
- Auto-Calibration of video input signals
- Support for standard definition video in 4:3 or widescreen 16:9 formats
- Secure, professional grade BNC video connectors
- Combination audio connectors permit XLR or ¼" (6.35 mm) phone jack connections
- Record full-screen video to a multi-platform compatible file format
- Optionally record the Switcher's Effects row selection instead of Program output
- Optionally archive your Internet stream
- Simultaneously output to broadcast, projector and live web stream
- LiveMatte™ realtime keying technology
- LiveSet™ virtual sets transform small spaces into grand studios
- Template-based titling system makes creating graphics and titles quick and easy
- NewTek's iVGA™ software allows any PC or Mac™ on the network to be a video input
- Full integrated character generator; create titles, motion graphics, scrolls and crawls
- 200+ effects allow you to transition from one camera or source to another with style
- Mix pre-recorded video or graphics into presentations using TriCaster's media players
- Blend microphones, music and other sound elements using the built-in audio mixer
- Windows Media™ and Flash™ streaming
- Prepare video segments for use in your productions with the built-in video editor
- Import and export a broad array of popular file formats, including QuickTime
- DVI/VGA projector output supports resolutions XGA, SXGA, up to QSXGA

3.2.2 DISTINCTIVE FEATURES

TriCaster TCSD family members (STUDIO and BROADCAST) differ principally in the type and number of audio and video inputs and outputs they each provide. Another interesting capability shared by TSCD models is your choice of operating modes: choose six-camera mode sharing a larger preview monitor, or three camera mode, each with its own dedicated preview monitor. There's a TriCaster suited to virtually every production need and budget. The following tables show the principal characteristics of the two TriCaster TCSD models:

TRICASTER STUDIO			
Video Inputs	6 Component (BNC) 6 Y/C (4-pin or BNC) 6 Composite (BNC)	Audio Inputs	4 Balanced mic/line Inputs (combo XLR 1/4") with Phantom Power option
Video Output	2 Component (BNC) 2 Y/C (4-pin or BNC) 2 Composite (BNC)	Audio Output	2 balanced line (1/4" phone) 2 Unbalanced Line Outs (RCA) 1 Stereo Headphone Out (1/8" TRS)
Video Ingest	2 x 6-pin IEEE 1394	iVGA™ Input	1 Gigabit network connection
Video Storage	> 20 hours	Signal Monitoring	Waveform Monitor and Vectorscope
Tally	6 Tally Light Connections	Recording	Record Program or Effect row output
Desktop Video Monitoring	3 camera monitors plus Program (3 camera mode), or large Preview and Program monitors (6 camera mode)	Media Players	2 Video DDRs

TriCaster BROADCAST is the premiere TCSD system, adding the following features to those mentioned earlier:

- SDI (Serial Digital Interface) video input/output
- SDI (capture) and AES/EBU audio
- Preview /Alpha channel output
- Genlock input
- Advanced Preferences panel

TRICASTER BROADCAST			
Video Inputs	6 SDI inputs (BNC) 6 Component (BNC) 6 Y/C (4-pin or BNC) 6 Composite (BNC)	Audio Inputs	1 AES/EBU digital audio (BNC) SDI-embedded audio (BNC) 4 Balanced mic/line Inputs (combo XLR ¼") with Phantom Power option
Video Output	1 SDI (BNC) 1 Component (BNC) 1 Y/C (4-pin or BNC) 1 Composite (BNC)	Audio Output	1 AES/EBU digital audio (BNC) 1 SDI-embedded audio (BNC) 2 balanced line (1/4" phone) 2 Unbalanced line (RCA) 1 Stereo headphone (1/8" TRS)
Secondary Video Output	Selectable Preview or Alpha channel output	Secondary Connections	1 SDI (BNC) 1 Y/C (BNC) 1 Composite (BNC) 1 Component (BNC)
Video Ingest	2 x 6-pin IEEE 1394	iVGA™ Input	1 Gigabit network connection
Video Storage	> 20 hours	Signal Monitoring	Waveform Monitor and Vectorscope
Tally	6 Tally connections	Recording	Record Program or Effect row output

Desktop Video Monitoring	3 camera monitors plus Program (3 camera mode), or large Preview and Program monitors (6 camera mode)	Media Players	2 Video DDRs
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3.3 MANUAL CONVENTIONS

TriCaster family members have many common attributes, but as we discuss these we will also encounter differences occasionally. One model may provide an extra feature – or a screenshot image that accompanies the discussion may vary slightly your compared to your TriCaster. We'll provide assistance along the way, so you'll know which features and functions are relevant to your own TriCaster and production environment:

Sidebars: At times, you may notice a nearby sidebar highlighting distinctions briefly.

TriCaster BROADCAST provides SDI (Serial Digital Interface) connections.

Captions: The text for an image caption may identify a specific model; in cases when differences don't really bear on the point illustrated, a single representative screenshot is used.

Cross References: When a more in-depth explanation for a feature is provided elsewhere in the manual, we'll add a cross reference (e.g., see Section 0,

Manual Convention).

Let's jump in now - first getting you connected, and then exploring the most important features of your new TriCaster!

4 SETTING UP



This chapter explains how to properly connect power, external control devices, monitors and audio visual sources to your NewTek TriCaster system.

It also reviews registration for warranty purposes and technical support. After completing this short section, you'll be all set to continue into the Quick Start chapter that follows it.

To begin, let's review 'what came in the box':

- NewTek TriCaster
- Manual
- Registration Card
- A/C power cord
- Keyboard and mouse
- DVI-to-DB15 (VGA) adapter
- S-Video Cable
- TriCaster Utilities for PC Network Sharing and Content Sharing (CD)
- BNC to composite video adapters
- DVI-to-HDMI cable (TriCaster BROADCAST only)

Hint: NewTek offers an optional TriCaster hardware and software, such as the LiveControl™ control surface, LiveText™, a great external live titling and graphics solution called that communicates with TriCaster across a network, the TimeWarp™ instant replay controller, and much more.

See the NewTek website at <http://www.newtek.com> for more details.

4.1 COMMAND AND CONTROL

Let's begin by removing TriCaster from the box, connecting the supplied keyboard and mouse to your TriCaster, and hooking up your monitor.

1. Write down the 25-digit Windows product key on the bottom of TriCaster. You'll need that information when you power up.
2. Connect one end of the supplied power cable to an outlet, and plug into TriCaster's power supply.
3. Connect the keyboard and mouse.
4. Connect your computer monitor to the DB15 VGA connector.
5. (Optional step) Connect a projector to the secondary DVI-I digital interface.
6. Optionally, connect the local area network (LAN) RJ-45 connector. (Make sure to use a special *crossover type* network cable to hook up a computer or laptop directly to the TriCaster.)
7. At this point, TriCaster is ready for operation. You may now turn it on, by pressing the large power button on its face to initialize the system.

Hint: Though not a requirement, we do strongly recommend that you connect TriCaster using an uninterruptable power supply (UPS), as for any 'mission critical' system. 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.

4.2 ACTIVATING & AUTHORIZING WINDOWS™

(Your dealer may have performed this operation for you as part of his pre-delivery service.)
When you see the '**Welcome to Windows**' screen:

1. Click **Next** at lower right.
2. Choose your time zone.
3. Accept the license agreement.

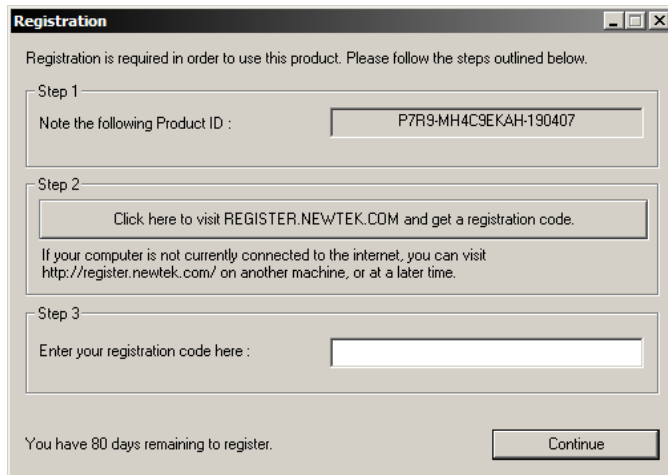
4. Enter your 25-digit key (on some models, the sticker is on the *bottom* of the case).
5. Decline automatic updates (by clicking “not right now”).
6. Give TriCaster a distinct computer name for networking.

You can authorize your Windows installation by network or by telephone. Assuming you have an Internet connection available, and have connected TriCaster to it with an Ethernet cable, the Internet is the fastest method of activation. (See Section 4.7 or more on network connections.)

7. Click ‘Obtain IP and DNS automatically’.
8. Agree to activate Windows. This activation is permanent, and you won’t see these screens again. (Registration with Microsoft is optional).
9. Assign a name to the *administrator* account. You may type your name, company, or perhaps simply “TCSD”.
10. Click **Finish**, and you system will re-start.

After restarting and accepting NewTek’s **User Agreement**, the interface will load automatically.

4.3 TRICASTER LICENSE AND REGISTRATION



The screenshot shows a 'Registration' dialog box with a title bar containing standard window controls. The main text reads: 'Registration is required in order to use this product. Please follow the steps outlined below.' The dialog is divided into three steps:

- Step 1:** 'Note the following Product ID :'. A text box contains the value 'P7R9-MH4C9EKAH-190407'.
- Step 2:** Contains a button labeled 'Click here to visit REGISTER.NEWTEK.COM and get a registration code.' Below this, it says: 'If your computer is not currently connected to the internet, you can visit <http://register.newtek.com/> on another machine, or at a later time.'
- Step 3:** 'Enter your registration code here :'. A text box is provided for input.

At the bottom left, it states: 'You have 80 days remaining to register.' At the bottom right is a 'Continue' button.

Figure 1

On launch, TriCaster presents an **End User License Agreement** dialog. After you accept this, a **Registration** dialog is presented. This panel provides the unique **Product ID** you need to register

your system. A 90 day period is allowed for your TriCaster to be registered and 'unlocked' (by entering the **registration code** in the space provided).

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

4.3.1 ONLINE REGISTRATION

If you have connected your TriCaster to the Internet, simply click the button under **Step 2** in the registration dialog. This will take you to the **Registration** page (<http://register.newtek.com>) in the **Customer Care** section of NewTek's website where you will find further directions.

Hint: More information on connecting TriCaster to a network can be found in Section 4.7.

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 3** of the dialog. (You'll want to record the *login name* and *password* you choose when creating your website profile, and check your personal area of the site from time to time afterward. Among other things, you'll be able to download any software updates that are made available.)

4.3.2 REGISTERING BY TELEPHONE

NewTek's Customer Care center can also handle registration requests by telephone, if that is more convenient (when opportunity permits, you should still visit the website as discussed above to gain 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 Technical Support contact information, please see Section A.8.2.

4.4 FRONT CONNECTIONS

4.4.1 CONNECT A/V DEVICES

Connections for external audio and video sources are located on TriCaster's front. TriCaster has full audio support for your presentation.

Plug the microphones or other audio sources into the XLR or ¼" (6.35 mm) inputs on the front panel. It is recommended that you use high-quality shielded cables to minimize hum or noise on the microphone input. (Optionally, you may also connect audio from an external audio mixer, CD player or other device to these inputs.)

Connect several cameras to the front of your TriCaster – use adapters if necessary, such as for cameras with only composite RCA output. (Please refer to your camera operations manual to determine what sort of output it provides.) Composite inputs should be connected to the BNC connector labeled **Y/Composite**. Y/C connections can be made using the standard S-Video (4-pin) connector, or using BNC connectors attached to TriCaster's **Y** and **R-Y** connectors.

Hint: Whenever possible, use the best possible video connection available to you. If your cameras support SDI output and you have TriCaster BROADCAST, use that option. Otherwise, choose component, S-Video or composite connections – in descending order of video quality.

To send your video output to an external video tape recorder or DVD recorder, connect the appropriate video *outputs* from TriCaster to the deck or DVD device. If your audio needs to be distributed, connect TriCaster's front panel audio connectors to an outboard audio mixer. To monitor audio during the presentation, plug your headphones into the headphone jack.

Note: TriCaster BROADCAST does not have S-Video (4-pin) connectors – use the Y and R-Y BNC connectors to input and output Y/C signals. (For Y/C output, you must also set Output Mode to Y/C in the configuration panel - see Section 6.12.)

Congratulations – in just a few minutes, you have powered up TriCaster and you are ready for live production, Internet streaming or video editing. If you haven't done so already, please do remember to go to www.newtek.com and register your TriCaster and check for updates.

4.5 GENLOCK CONNECTION

4.5.1 GENLOCK CONNECTION

TriCaster BROADCAST (only) provides a **Genlock** input on its faceplate. This allows you to connect your ‘house sync’ or *reference signal* (often a ‘black burst’ signal intended specifically for this purpose) to TriCaster. Many studios use this method to synchronize equipment in the video chain.

Genlocking is commonplace in higher-end production environments, and professional gear usually provides genlock connectors. If your equipment allows you to do so, you *should* genlock all cameras supplying TriCaster, and TriCaster itself. To genlock TriCaster, supply the reference signal from the ‘house sync generator’ to TriCaster’s **Genlock** input connector.

Important Note: *Digital audio is less tolerant in certain respects than analog. To avoid occasional audio glitches when mixing digital audio (whether for recording or live production) you must ensure that the timing for all digital audio sources is synchronized. This means that for digital audio, you must do one of the following: 1) genlock your digital audio source and TriCaster to a house reference signal, or 2) genlock cameras directly to the output.*

(If you haven’t already done so, genlock all cameras connected to TriCaster inputs to the same reference signal – see your camera manual for details.)

4.5.2 VGA OUTPUT (VIDEO PROJECTION)

A secondary DVI video connector on TriCaster’s backplane makes it possible to connect another monitor or perhaps a video projector to TriCaster – typically to supply program output for IMAG (Image Magnification) installations.

This connector provides a primary program output from the **Switcher**. Simply connect a suitable external monitor or device to the DVI connector. (The new device should be recognized and enabled by the system automatically, but occasionally a reboot may be required.)

Note: For best results, configure Resolution in the Output to VGA section of the External tab (Live Production pane) to the native resolution for the external monitor or projector.

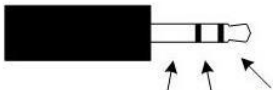
Configuration and control of VGA Output is detailed later, in Section 6.9.5.

4.6 TALLY LIGHTS

TriCaster STUDIO and BROADCAST both offer **Tally Light** support. Red LEDs on the faceplate show which video input that is currently selected on the Switcher's **Program** row. A connector located beside each LED allows TriCaster to drive external tally light systems.

TriCaster's tally light jacks employ standard TRS connectors (tip-ring-sleeve – see Figure 2) to control external tally solutions, as described next:

The 'ring' connector provides a 'logic low' signal when the tally is not lit, and 'logic high' when it is.



The signal is connected to the "ring" contact through a 100 ohm resistor.

Figure 2

The 'sleeve' contact is connected to ground through a 100 ohm resistor. This means there is a total of 200 ohms resistance for current limiting when driving the diode. (This could be used to drive a low-voltage solid state relay that would provide true isolated contact closure.)

An LED may be driven directly by connecting it across the ring and sleeve connections (no external current limiting resistors needed). The LED anode should be connected to the ring and cathode to the sleeve. Current is limited to 25mA (0.025 amps). When there is no load across the ring and sleeve (and therefore no voltage drop across the current limiting resistors) you should see a DC voltage of either 0 volts or about 4.5 volts, depending on whether the LED is off or on.

ENGINEERING NOTES

The tip and sleeve connections can be used to provide a *sort* of relay that closes when the tally light is on (verify this with an ohm meter across the tip and sleeve connections).

Important Note: *This is not a true contact closure circuit, since the sleeve (being tied to ground through a 100 ohm resistor) it is not completely isolated. To prevent damage to TriCaster's components when making external connections to the tally light jacks, care should be taken that connections to the sleeve are always at ground potential. Failure to do so could burn out the 100 ohm resistor, causing the LED tally feature to fail.*

4.7 NETWORK CONNECTION

TriCaster is capable of displaying screens from networked computers running NewTek's iVGA™ client software, or output from other supported applications (such as NewTek's own LiveText™).

Connecting TriCaster to a *local area network* (LAN) may require additional steps beyond those mentioned back when we discussed Microsoft Windows™ activation (Section 4.2). Here is the basic procedure involved in joining a *workgroup*:

1. Connect a suitable cable from the ETHERNET port on TriCaster's backplate to your external network.
2. (If necessary) – exit the **TriCaster Desktop** to the **Administration Desktop**:
 - a. Click the **[x]** button at the right-hand end of the desktop titlebar.
 - b. Click the **Admin** button in the **Shut Down TriCaster** dialog.
3. Right-click on the **My Computer** icon, and select **Properties**.
4. Click the **Computer Name** tab of the **System Properties** panel that opens.
5. Click the **Change** button, and enter the name of your local *workgroup*, as provided by your system administrator.
6. Close the **OK** button.
7. Close the **System** control panel.
8. At this point, the network connection should be functional. If further help connecting is required, please consult your system administrator.

5 LIVE PRODUCTION WALKTHROUGH



This chapter provides a quick hands-on tour of the major components and functions of your NewTek TriCaster. In a very short time, these basics will be second nature to you.

More detailed reference material on all aspects of TriCaster follows in Part II (Reference).

Consider the TriCaster your personal ‘broadcast center’ in one compact and easily portable case. Seamlessly blend multiple live cameras, audio, digital video, images and titles; stream your program on the Internet, video monitors, computer screens, projection devices, or all of the foregoing at once. Having made the essential external connections in the previous section, we’ll proceed to an overview of TriCaster fundamentals:

- Monitoring and related features.
- Network sources.
- Switching between video sources and using transitions.
- Recording a/v clips
- Playing stored clips using the DDR (‘Digital Disk Recorder’).
- Adding (and editing) title pages and graphics.
- Using LiveMatte to create a simple chromakey effect.
- PiP (Picture in Picture) effects – superimposing one video source on top of another.
- Creating a LiveSet (virtual set) shot.
- Streaming your program to the Internet (and recording the stream).

5.1 PRODUCT MODE OPTIONS

TriCaster STUDIO and BROADCAST models each have six video inputs. However, according to your personal preference, both models provide an optional three input mode, which offers certain advantages in some environments.

To access mode options, click the small [x] button at right in the **TriCaster Desktop**'s titlebar, and then click the **Admin** button to go to the **Administration** desktop. A number of useful options and utilities are located here for convenient access. At lower right in this panel is the configuration link (Figure 3).

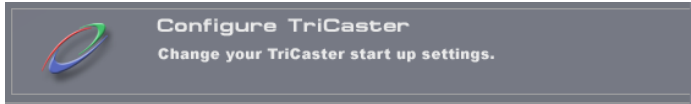
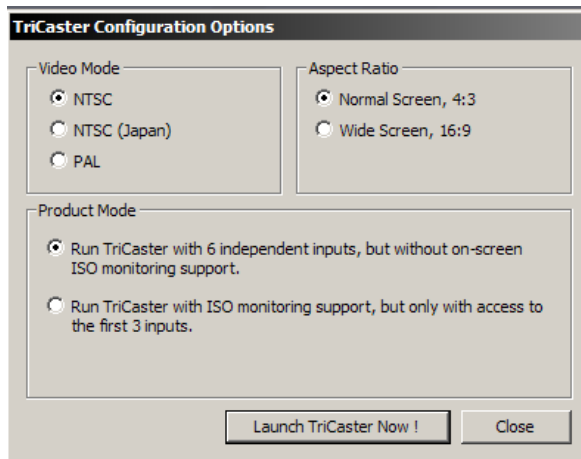


Figure 3

Click this to open the **TriCaster Configuration Options** dialog (Figure 4).



Your selections in this panel determine the configuration your TriCaster adopts the next time you launch it (using the nearby **Launch TriCaster** link on the **Administration** desktop).

The upper section of the panel allows you to choose between **4:3** and **16:9** image aspect ratios (Multi-standard systems also offer two video standard options, **NTSC** or **PAL**).

Just beneath this you will see the **Product Mode** section.

Figure 4 – TriCaster STUDIO, International version

The optional **Product Modes** are discussed next.

5.1.1 6-CAMERA MODE

In the 6-Camera mode, all six analog video input connections located on the front panel of the TriCaster system are active and available for use.

In this configuration, the upper left-hand third of the **LIVE Production** screen is occupied by a quad display showing the video sources assigned to the **DDR**s, the current **External** source, and a full-time combination **Waveform** and **Vectorscope**.



Figure 5

To the right, large **Preview** and **LIVE Output** monitors show the video sources currently selected on the Switcher's **Live** and **Preview** rows. You can sample the video feed from any of the six inputs by selecting them one at a time on the Preview row.

However, if you do not plan to use more than three live video sources for a given production, you may find the 3-Camera mode discussed next very handy.

5.1.2 3-CAMERA MODE

In 3-camera mode, the first three of the TriCaster's video Inputs are active. This is ideal for the common 'three camera' production setup, and has one unique advantage.

Each of the three inputs is *permanently* assigned to a small independent viewport in the monitoring section of the LIVE Production screen. Thus (as seen in Figure 6) each of the first three monitors in the upper row consistently shows its respective source.



Figure 6

This option is great for portability, relieving you of the bulk (and expense) of physical monitors for independent views of each input. (When full-time monitoring of more than three sources is vital, an external monitoring solution is required.)

Note: In this configuration, the optional Waveform/Vectorscope displays in the LIVE Production monitoring section are transplanted to a drop-down menu beneath the large Preview monitor.

A further benefit – as discussed later (see Section 6.1.1), the individual monitors are interactive in 3-camera mode, providing an alternative method to perform live switching with confidence.

5.2 THE LIVE PRODUCTION TAB



Figure 7

The LIVE Production panel has its own tab at the top of the screen. The video stream selected the **Live** row of the Switcher constitutes TriCaster's primary output, before the addition of any downstream LiveSet virtual set or overlays.

5.2.1 INPUT SETUP AND SWITCHING

1. Connect video sources to **Input 1** and **Input 2** on TriCaster's front panel, using the appropriately labeled connector(s) for your camera and cable connection type.
2. Click the **Input Setup** tab, and then click the triangle button beside the **Input** field. Select **Input 1** in the drop-down menu.
3. Under **Type**, at right, click the button appropriate for the source attached to **Input 1** (a blue LED in the interface illuminates to confirm your choice).
4. Click the triangle beside the **Input** field again, and this time, select **Input 2**.
5. Send **Input 1** to TriCaster's output – click the button labeled 1 on the second (**Live**) row of the **Switcher** (Figure 8).

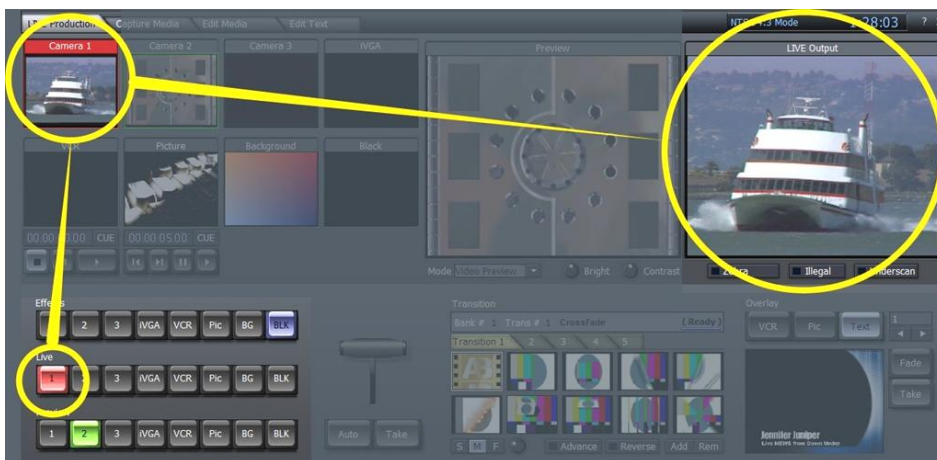


Figure 8 (6-camera mode)

The **Switcher** button turns red, and the corresponding video source appears on the **LIVE Output** monitor.

This indicates it is available to connected video display devices and/or the Internet, and optionally for recording to disk, too.



Figure 9

6. Click **Input 2** on the **Preview** row – Figure 9.
7. Click the **Auto** button, and you will see **Input 1** fade out (over one second) and be replaced on output by **Input 2**. (Click **Take** instead if you want the change to occur instantly.)

Note: you can manually control the transition, too, by grabbing the T-bar with the left mouse button and dragging it downward.



Figure 10

Several **Transitions** are pre-loaded in the **Transition Bin**. Transitions swap the sources selected on the **Live** and **Preview** rows.

You can perform a transition in several ways: double-click the transition in the **Transitions** pane; click on the transition to select it and then click the **Auto** button, or simply tap the keyboard **Spacebar**.

5.2.2 EXTERNAL



Figure 11

For a presenter to add **PowerPoint**, web pages, and other content from the display of different computer systems, or text or graphics from NewTek's LiveText™ running on another computer on the network, click the **External** tab.

IVGA CLIENTS

1. For a Microsoft Windows® client, copy the **iVGA** program from the TriCaster iVGA folder (inside C:\TriCaster, or from the compact disk supplied with TriCaster) to the sending computer.

For OS X client systems, copy the file iVGA.dmg.zip from the same folder to the Mac. Unzip it by double-clicking it; mount the disk image (.dmg file) in the same manner, then drag the iVGA program icon into Applications. (See Section 6.9.1, Using iVGA for more detail.)

2. Connect your TriCaster to the client computer via the local network. (For computer-to-computer connections, use the supplied crossover cable to connect directly to TriCaster.)
3. Double-click the iVGA icon on the second computer.
4. After agreeing to the NewTek license (and allowing a moment or two for the network connection to be established) the name of the remote computer is added (along with "Black" and any other networked systems with iVGA running on them) in the iVGA client list of the **External Source** menu of your TriCaster (Figure 12).

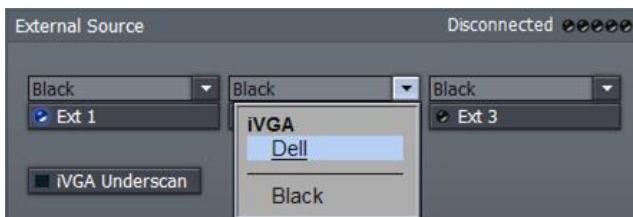


Figure 12

When in operation, iVGA places a red-green-blue 'TV monitor' icon at the bottom of the screen on the client system. For a Windows' system, the icon is placed in the task tray;

on Macintosh systems the TriCaster 'swirl' is placed in the dock. This indicates this computer's display is ready to send to TriCaster.



Figure 13 – iVGA source on LIVE Output

5. Select the second computer by name, and you will see the designated screen from the remote computer displayed in the **Ext** monitor.
6. Click **Ext** on the **Preview** row and it is ready to transition to **Live** (Figure 13).

LIVETEXT™



Figure 14

NewTek's (optional) LiveText™ application offers features that will be familiar to users of TriCaster's **Edit Text** (see Section 5.5 and Chapter 9, Edit Text).

However, **LiveText** is installed separately on a compatible Microsoft Windows® computer, and brings many other special abilities to its users.

A workstation with **LiveText** installed is effectively a dedicated graphics and title solution for TriCaster presentations. (This is a wonderful addition for those times when you could really use another pair of hands.)



When running on the network connected computer, **LiveText** will be listed in the **External Source** menu, similar to an iVGA source (but in the **Applications** group).

When enabled, the current LiveText page is available as an **Ext** video source, ready for assignment on TriCaster's **Switcher** or in its **Overlay** panel.

Figure 15

For more information on installing and using this great tool, please refer to the LiveText manual.

5.2.3 PLAYING VIDEO CLIPS



Figure 16



Figure 17

Video is a great way to improve a presentation, so let's add some clips. Click the **DDR** tab (in the row below the **Switcher**), and click the **Add** button for **DDR 1**.

1. Navigate to the D:\Media folder, and add 4 or 5 video clips from the folder D:\Media\Clips.

2. Make sure that **List** mode and **Loop** mode are selected in the DDR Playback Mode section (Figure 18).
3. Under the **DDR 1** preview monitor in the **LIVE Production** tab, click **Play** (the triangular button) to run your clips. Again, you can choose **DDR 1** on the Switcher's **Preview** row and transition to the video when you want it.



Figure 18

There is an even more powerful way to play these clips called **Cue** mode. Cue allows you to commence playback automatically when you transition to a **DDR**, and transition back as it completes.

4. Click **Stop** in the **DDR** control pane (if a clip is playing),
5. Turn **Selection** on and **Loop off** in the DDR panel.
6. Select **DDR 1** on the Switcher's **Preview Row**
7. Click **BKG** (Background) on the Switcher's **Live** row.
8. Click the **Pause** button under the **DDR 1** monitor window, and then press **Cue** (three buttons, Cue, Pause and Play will light up.) Your DDR is now armed for precisely timed playback.
8. Press **Enter** to trigger a **Take** and you'll see the DDR switched onto output. The video clip begins playing at once. Press Enter again, and the clip pauses where it is, and returns to **Preview** position.
9. With **DDR 1** selected on the **Preview** row, change its behavior from List to **Selection** mode. (This will unlock Cue, so you'll need to click **Pause** again under the DDR window.)

10. Press **Enter** on the keyboard again. The clip begins to play, as before – but this time the **DDR** will **Auto** transition back to **Preview** just before the clip reaches its end. You don't need to do the switch manually. (Conveniently, the next video in line in the DDR playlist is automatically cued up and ready to play.)

5.2.4 TEXT AND TITLES

What about titles? TriCaster provides powerful titling and graphics tools, including quick and easy title templates. Click next on the **Text** tab, and we'll quickly add a title page.

1. Click the drop-down triangle beside **Add to List** to reveal a menu listing a huge number of professionally prepared templates.



Figure 19

2. Click on a lower-third title, such as the one in Figure 19. A thumbnail for the page is added to the playlist panel below.



Figure 20

3. Now click the **Clone** button to duplicate the entry, and then click directly on the second thumbnail. This activates the duplicate template visible in the title editing pane at left.
4. In the editing pane, click any text to pop up a text-entry field. Click inside this box to replace the current text with something new. Afterward, press **Enter** to accept the changes you made.

5. On the line beneath it, continue to modify the headings. You can add more template pages and tweak them if you wish.

Now to cue up the title page:

6. Click the **Text** button in the **Overlay** control area (located to the right of the **Transition** banks (Figure 20).
7. Now double-click one of the page thumbnails you modified. The page appears in the small **Overlay** preview panel, permitting you to verify your choice of the title page before you actually activate the overlay.

Use the **Fade** and **Take** buttons near the **Overlay** preview to display the selected overlay (in this case a Text page) on top of your **Live** source.

5.2.5 COLOR BACKGROUNDS

TriCaster also includes a **Color Background** generator. Include these backgrounds in your presentation by clicking the **BG** button at the extreme right of the **Switcher** rows.



The backgrounds generated can be used behind **Overlay** pages, as a background for **LiveMatte** effects, or for other purposes.

The **Color Background** tab (Figure 22) has three sections -- the **Background Preview**, **Mode** and **Presets** panes. (The **Horizontal mode** is shown above - two colors are blended from left to right across the display.)

When you left-click any of the four outer square patches bounding the **Preview** pane, the **Pick Color** window appears. Using this, you can assign a color to that color patch. You can do so numerically – or by a direct click in the palette pane of the Pick Color panel.

Figure 21

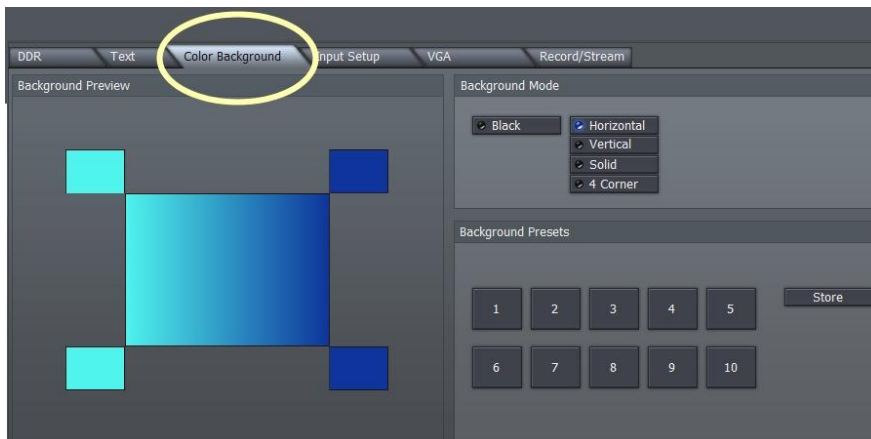


Figure 22

Hint: to match a specific color in your imagery, right-click on the square; continue to hold the button down as you drag to the point you wish to pick the color from. The square updates as you drag the pointer around the screen, showing the color under the pointer at any moment – release the button to make your selection.

The **Background Preset** section allows you to easily recall frequently used background combinations. Set up the **Preview** pane to taste, click **Store**, and then click a Preset button.

5.2.6 LIVEMATTE

TriCaster's **LiveMatte** keying system removes a specified color range – the 'key' color – and a tolerance factor on either side of it from one video or image source, replacing it with material from another source.



Figure 23

The best known application for chromakeying is the ubiquitous TV weather broadcast. In the studio, the presenter stands in front of a green screen. The chromakey system replaces the green (key) color with computer graphics.

TriCaster's **LiveMatte** provides a very high quality yet easy to use keying system. To begin our exploration of LiveMatte's basic operations, we will select some suitable source material.

Hint: You may not be all set up with a greenscreen studio, so NewTek has supplied some Demo clips for this purpose, already installed on your TriCaster.

LIVEMATTE AND THE SWITCHER

When a **LiveMatte**-enabled source is selected on the Switcher's **Live** row, imagery from the **Effects** row source shows through wherever the key color is removed.

To create a **LiveMatte** effect showing the **Color Background** you've arranged behind a demo clip in **DDR 1**, follow the steps below:



Figure 24 (3-camera switcher)

1. Select the **BG** button in the Switcher's **Effects** row. This marks it as the backdrop source for LiveMatte.



Figure 25

2. Select the **DDR 1** button in the Switcher's **Preview** row.
3. In the **DDR 1** tab, remove any clips you may have added previously, then **Add** the video clip *D:\Media\Clips\DemoContent\Cam-XCLOseUp.avi*

*Hint: In 6-camera mode, you can use the dedicated **Preview** monitor to tweak LiveMatte settings before displaying the result to your audience.*

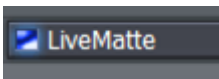


Figure 26

4. Click **Input Setup**, and enable the main **LiveMatte** switch.
5. Enable the **Follow Preview** switch

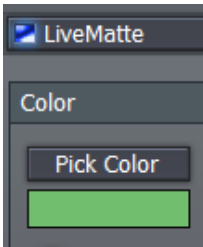


Figure 27

6. Click the **Pick Color** button, and keep the mouse button depressed.
7. Drag the eye dropper (cursor) up to the **Preview** monitor for **DDR 1**. Release the button over the background green color, assigning it to the 'key color' swatch.
8. Adjust the **Tolerance** value until all the green pixels are transparent, allowing the **Color Background** (selected on the **Effects** row) to show through.
9. Click the Switcher's **Take** button (or press the Enter key) to send the **LiveMatte** enabled source from the **Preview** row to **Live** output.

You should now see your onscreen talent displayed above the colored background you chose.

Hint: LiveMatte settings also play an important part in connection with NewTek's LiveSet™ technology! Please refer to Chapter 10 (LiveMatte, LiveSet, Action) for more detail on this astonishingly powerful part of your system.

Naturally, as befits the name, LiveMatte works wonderfully with live sources as well. We'll discuss other more advanced LiveMatte settings later on in the manual.

5.2.7 AUDIO

TriCaster's live **Audio Mixer** is a very simple way to integrate presentation audio. Connecting microphones or other audio sources is easy (external connectors are labeled to avoid confusion).

The **Audio Mixers** of the different members of the TriCaster TCSD family are quite similar. However, only TriCaster BROADCAST supports *digital* audio (AES/EBU or SDI-embedded) input and output.



Figure 28

The controls in the **Setup** tab (Figure 28) are the audio equivalent of the video **Input Setup** panel. They permit you to assign each input as either **Mic** (Microphone), **Variable Gain**, or **Line** level.

A **Phantom Power** option can be enabled as required for Mic or Variable settings (typically for condenser type microphones requiring external power).

At right, a tall VU meter shows left and right output levels for the main audio output mix. A red **Master Volume** knob below controls the main output level, while another at the top governs output to the headphone jack. (These controls are always visible).

The **Audio Simple** tab (Figure 29) provides volume sliders and **VU** meters for each input (including the DDRs.)

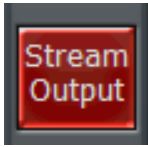
Solo and **Mute** switches are provided for each source (including DDRs), while **Talk Over** is supplied only for external inputs.

The **Audio Advanced** tab gives access to equalization controls for each input. More detail on all of these features is contained in Section 6.11.



Figure 29

5.2.8 INTERNET STREAMING



Sending your output to the world can be nearly as easy as connecting TriCaster to the Internet (or intranet), and pressing the **Stream** button (located right below the **Program** output monitor).

Figure 30

STREAMING CONFIGURATION

A number of optional settings for configuring the streaming output are located in the panel that is displayed when you click on the **Record/Stream** tab (near the center of the main **LIVE Production** screen.)

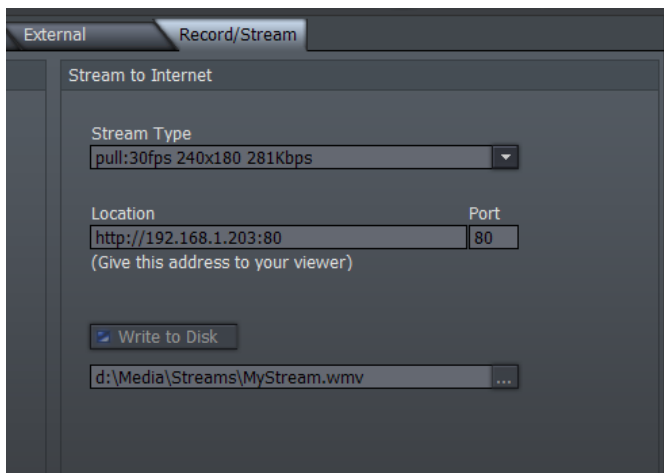


Figure 31

Basic connection information follows, but please note that all controls and options, along with various other factors you may wish to consider (especially if your plans involve broadcasting to a large audience) are discussed further in Section 6.10, Record and Stream, and yet again in Appendix B, Streaming, Networking and the Internet (this section will help you integrate your TriCaster into environments involving various external hardware components).

The **Stream Type** options allow you to select between **Windows Media Pull**, **Windows Media Push**, and **Adobe Flash** streaming protocols. To the right of these switches is a **Streaming Profile** selector, which permits you to select from a long list of pre-configured size and bandwidth *presets* for your Internet broadcast. You can choose a profile to suit your current need, considering both the capability of your outbound Internet connection and the typical bandwidth of your viewing audience as well.

SIMPLE PULL STREAMING

“Pull” streaming is arguably the simplest way to get your production online:

1. Select a **Windows Media Pull** preset as the **Stream Type** (Figure 31).
2. Press the **Stream Live Output** button at lower right on the **LIVE Production** pane (Figure 30).
3. Oh wait, there *is* no step three ...

Believe it or not, that’s it. In a few moments, TriCaster’s streaming feature provides you with the IP (Internet Protocol) address of your computer as viewed from the network. This information will be provided to you as a ‘punctuated’ numeric value in the **Location** display field.

Hint: If your TriCaster is connected to the network by a router or is behind a firewall, it may be necessary to take further steps to provide external access. See Appendix B for a more elaborate explanation.

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

PUSH AND FLASH STREAMING

Windows Media Push and **Adobe Flash** streaming are slightly more complex, largely because they depend on external resources to distribute your stream to a wider viewing audience. These may be provided in house by your organization, or you may take advantage of a commercial (or ‘free’, advertising -sponsored) Content Delivery Network.

(Arrangements and requirements of various streaming hosts are diverse, but TriCaster’s **Stream to Internet** pane adapts to provide all the necessary input fields for the various types.)

Hint: More detail on these matters, including connecting to a network and numerous useful tips on streaming strategies is found in Appendix B.

CAPTURING THE STREAM

Whenever you are streaming your output, TriCaster can archive the live stream as a file. Click the Browse button [...], and choose a location for files to be saved to. Then click the **Write to Disk** button above (do this before clicking the Stream to Internet button to commence the stream).

This is a very useful feature. Among other things, it allows you to post the captured file to a website immediately after an event for ‘video on demand’ streaming purposes – for late arrivals or others who want to review the live event.

Note: Remember to stop streaming when your production concludes, or TriCaster will continue writing the stream capture file.

5.3 CAPTURE MEDIA

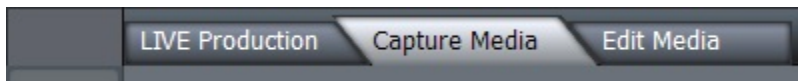


Figure 32

The **Capture Media** tab is used to acquire (standard definition) video and audio from cameras, decks, and other sources.

Note: TriCaster programs and utilities are installed on the C: drive, while your media folders are on the D:\ partition. This is where you will store your captured video clips, audio files and pictures.

The **Capture Media** screen is divided into four sections: **DV Camera Control**, **Capture Control** beneath that, **Capture Details** to the right, and the **Captured Files bin** across the bottom.

If you connect a camera or deck to TriCaster using IEEE 1394 (known as FireWire™, or often simply “DV”) you have the benefit of capturing audio and video across one cable and the added advantage of device control for play, pause, fast forward, etc. Let’s capture a bit of video now:

Using a suitable FireWire cable (not supplied), connect your DV camera or deck to a 4 or 6-pin FireWire connection on the TriCaster (the front connector is marked with the FireWire symbol, resembling a stylized “Y”).



Figure 33 - TriCaster STUDIO

After a moment or two for your system to recognize the new device, the **DV Camera Control** pane acknowledges the connection with a confirmation message, and displays the time code position of the tape at upper right. The transport controls beneath the timecode activate, and you can now fast-forward, rewind, play and pause on screen.

Note: For analog video captures, you must connect a composite, S-Video or component-video cable to the first appropriate TriCaster input.

Likewise, connect audio cables to the corresponding Line input connector. Then activate the proper input (composite, S-Video or component) in the Capture Details. Control your camera or deck manually, and use the Capture controls as described here.

Ensure that the blue LED-style indicator next to **DV** is illuminated in the **Input** (source) selection of the **Capture Details** pane.

Hint: It is recommended that you save projects in their own folders; TriCaster has buttons in the Hotlist area along the bottom of the Media Bin to make it easy to jump to where you need to go.

Let's begin by navigating to the "D:" drive – click the [TriCaster] tag at the top of the **Captured Files** window, and then *double-click* on the icon for the D: drive in the window.

Now, let's make a new folder for this test capture. Right-click in a blank section of the **Captured Files** window; then click inside the popup name dialog that appears under the mouse pointer. Type in a folder name (such as "Test Captures"), and press Enter on the keyboard.

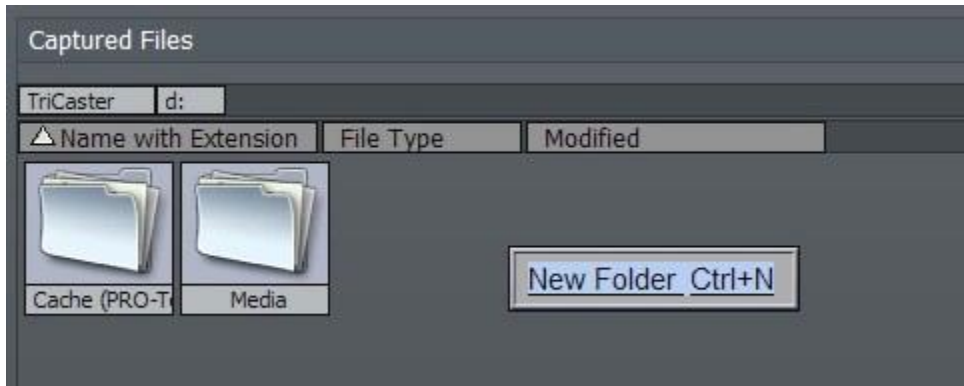


Figure 34

The new folder appears highlighted in the media window. Double-click it to enter. We want to quickly return to this location for live and editing sessions, so click on the small [+] sign at the lower left corner of the file pane. This creates a new button at the bottom of the window, labeled D:\Test Captures.

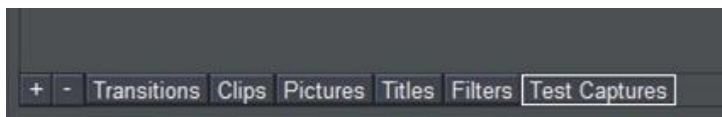


Figure 35

Let's shorten that a bit. Right-click on this button and choose **Rename Tab**. Then remove the "D:" so it just reads "Test Captures."

Hint: We recommend you organize your projects and captures in primary folders this way, with subfolders for video, audio and pictures. That way, everything remains centralized for easy access, removal, and archiving when the project is completed.

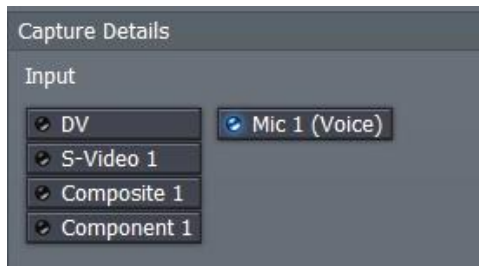


Figure 36

Roll the tape to the point you wish to capture, and press **Capture**.

You'll see the display incrementing how long this clip is in minutes, seconds and frames. As you press **Stop Capture**, the clip will appear in the Captured Files folder at the bottom.

The [||] button will **Pause** your capture, and the **Picture** button will grab a still image from moving video, and store it as a JPEG file.

As you capture footage, monitor the audio levels; adjust the incoming volume to maintain the signal below 0 dB.

Try to keep audio as close to 0dB as possible *without* going over (audio peaks hovering in the -6 to -3dB area are good (of course, audio via IEEE1394 is transferred at its original levels.)



Figure 37

Hint: TriCaster offers instant clip playback from the Captured Media window by double-clicking the clip. (The clip will run in the Capture preview window, as well as on the Live output stream.)

If you wish to record narration, select **Mic 1 (Voice)**. The **Capture Preview** monitor switches to a waveform view (Figure 38), and then you can use the capture controls as described above.

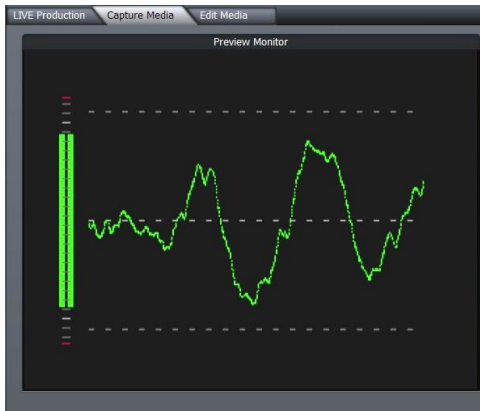


Figure 38

As you record clips the **Hard Drive Space Available** gauge will show how many gigabytes or megabytes you have free.

Hint: To import picture or audio files, you can transfer them to TriCaster in any of several methods: USB or FireWire flash thumb drive or external hard drive, or via the local network.

5.4 EDIT MEDIA

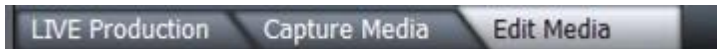
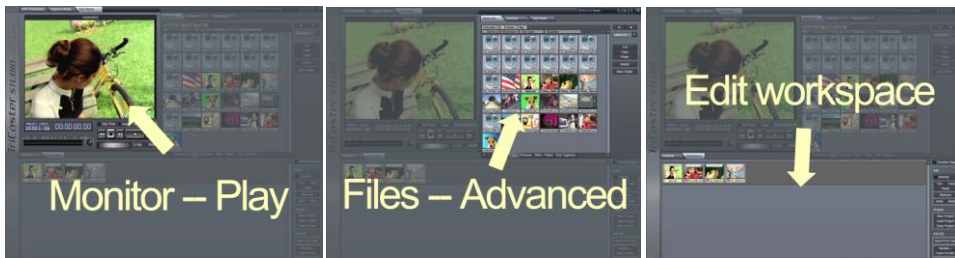


Figure 39

The **Edit Media** tab enables you to create practically any video project you can imagine -- from simple, 'cuts-only' projects to longer and more elaborate presentations with titles, multiple video layers, high-end transitions, slow motion effects and numerous other digital video effects.

The edit screen is divided into three main sections:

- Playback controls and the primary Edit Project Monitor in the upper left quadrant
- The tabbed upper right section providing file access and advanced editing functions
- Across the bottom, the edit workspace, where you assemble your project using either the **Storyboard** or **Timeline** view



Hint: There are benefits to both Storyboard and Timeline views -- each is explored in greater depth in the editing chapter of this manual.

For now, let's build a simple project and then explore some of the things we can do to spice it up.

Select the **Edit Media** tab, and click on the **Media Bin** (in the upper right part of the screen). This is where we locate files we want to work with. At the bottom of the bin window, click on the **Clips** button in the **Hotlist** (to jump to the folder D:\Media\Clips)

5.4.1 STORYBOARD

At the top of the edit workspace, click the **Storyboard** tab. The Storyboard is a simplified view of all your project assets in sequential order. Hold down the **Ctrl** key and click on 5 or 6 clips in the Media bin pane, then drag the selected group into the Storyboard window.



Figure 40

Clip adjustment is quite easy in the **Storyboard**. To adjust the beginning of the first clip in our new project, place the cursor over the left half of the clip, and hold the **Alt** key. The cursor changes to 'IN' and the left/right arrows are a Hint that by holding the left mouse button down and dragging left or right, you can choose a new starting point for this clip.

Continuing to hold the **Alt** key, place the cursor over the right half of the icon, and the cursor changes to 'OUT' allowing you to choose a different last frame. Adjust the other clips to your liking, and play your project by tapping the **Spacebar** (tapping the Spacebar alternately pauses or begins playback.)

Automatically add a dissolve transition to a clip by clicking on it, then pressing **Alt-f**.

Hint: If 'nothing' is selected in the editor, 'everything' is selected. Clicking Alt-f will add fades between everything that is not an overlay. To limit the selection, highlight one clip, hold down the Shift key, and click on another several clips away to highlight the whole range. Pressing Alt-f this time would add transitions to just the selected range.

If you have a specific transition you'd like to add, click the **Transitions** Hotlist button at the bottom of **Media Bin**. There are hundreds of transitions you can insert between clips.

Undo that last change by pressing **Ctrl-z**. Press the **Home** key to jump to the start of the project, and then press the **Spacebar** to play the project back.

5.4.2 TIMELINE

Storyboard view is limited to sequential clip display. **Timeline** view, on the other hand, allows for complex layering. Click on the Timeline tab for a different view of your project. If you cannot see all clips, double-click on an empty spot in the Timeline to auto-fit the project.

Let's add some audio to our project.

Note: unlike some other edit software, TriCaster's Timeline does not restrict audio samples, video clips or transitions to specific areas of the project window. They can be freely mixed and repositioned as needed.

We're already viewing the contents of the Clips folder in the Media Bin. Drag an audio file (sound samples usually have the file suffix ".wav") into the project, placing it in the Timeline beneath the video clips at the start of the project.

5.4.3 CONTROLS

To edit this file, click on the **Controls** tab at the top of the screen. This panel changes views based on the type of clip selected in the editor. When any audio clip is selected you can modify levels and set keyframes for them. Note the time bar across the top of Controls view that shows where we are within this clip.



Figure 41

Let's move this music file from the left channel to the right over the duration of clip:

- Go to the beginning of the audio file and set the **Balance** slider to far left, then click the **Keyframe** button to set it.
- Play or scrub to the end of the clip, and slide **Balance** to far right. (Note as soon as you move Balance, **Keyframe** activates. Keyframing is automated, and only the first setting needs to be marked by clicking Keyframe.)

When you play you file back, you'll see **Balance** slide from left to right.

TRANSFORMING VIDEO

The **Controls** tab allows even greater flexibility while editing the video portion of a clip. Go back to **Media Bin**, and drag a video clip underneath this audio clip. Then return to Controls view to see the clip in the Controls window, with a list of options beneath it.

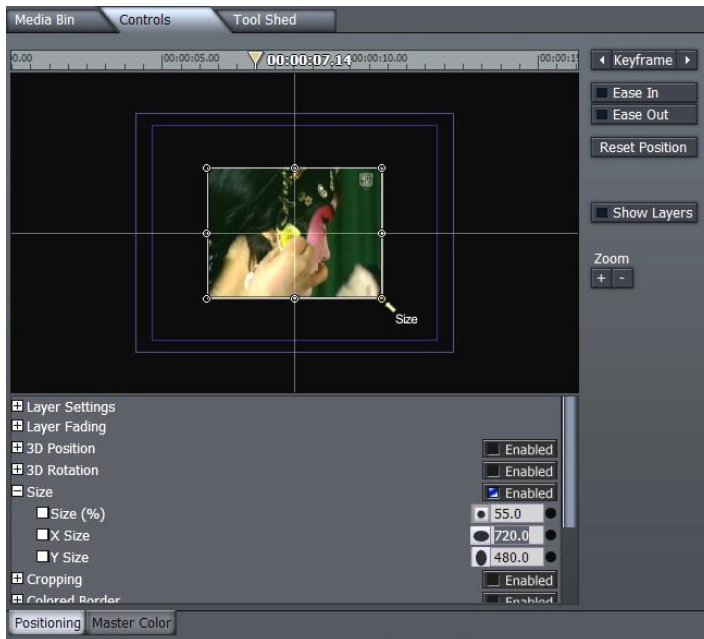


Figure 42

To overlay this over the existing clips, activate the **Overlay** button to the lower right, or press the 'y' key. Now, place your cursor over one of the corners of the clip in the controls view and see **Size** appear below the cursor. You can now left-click and drag inward to shrink it down on top of the existing clips.

Left-click in the center of the clip and drag it to the upper left corner, keeping it within the inner blue box. Click **Keyframe** to set this beginning position. Scrub (drag the cursor in the time scale) to the middle of the clip and drag the scaled down image in the preview window to the center of the screen; then scrub to the last frame and place the image at any other corner (setting another keyframe automatically.)

Press **Play**, and you'll see that you quickly created a background layer with a smaller, moving layer on top. To help separate the two, click the Enabled button on the Shadows control and play again.

ROTATION

You also have full 3D rotation, which can be adjusted by moving the cursor outside the edge of the clip until you see the tool Hint '**Rotate**'. Left-click and drag the mouse to rotate the object along the Z-angle. Right-click and drag left or right to rotate on the Y angle; Drag up or down to rotate along X.

To crop this clip, you move the cursor just outside one of the clip edges in the controls view until the cursor Hint changes to '**Crop**'. (Dragging with left mouse button will crop all four edges; the right mouse button affects only the selected edge.)

Soft edges are also desirable, and we can do that here too! Move the cursor just inside the edge of the clip (so the cursor Hint reads '**Smooth**') and drag inward.

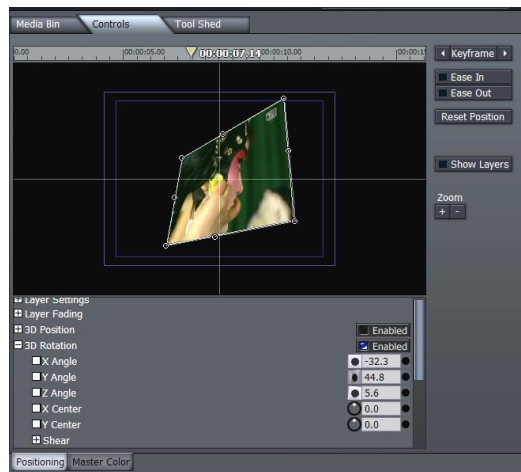


Figure 43

SLOW MOTION

If you need slow motion, simply place the mouse over the edge of this clip, then pressing the **Alt** key (note the cursor changes from IN or OUT to '**Stretch**') and left-click and drag the clip to make it longer.

Dragging the clip to twice its length will cause playback at 50 percent speed. You can now adjust the in and out points of this clip, and the playback speed will remain as you set it.

COLOR CORRECTION

If we wish to color correct this clip, scroll down the Controls window to Color Correction near the bottom. Click the '+' symbol to reveal our options. Place the time bar at the beginning of this clip, and Press the Keyframe button upper right.

We have now set full color at the beginning. Scrub to the middle of the clip and change Saturation to 0.00. Click Keyframe. Now our clip slides from full color to black & white.

FADE IN/OUT

Instead of having this clip abruptly appear, we can fade it in. In Timeline mode, note each clip has a small white triangle at lower corners. Position the cursor over this corner and when it changes to 'Fd', you can now left-drag that inward. Do this on both sides of the clip, and now our picture-in-picture smoothly fades in and out. You can also position clips off screen and move them in during playback.

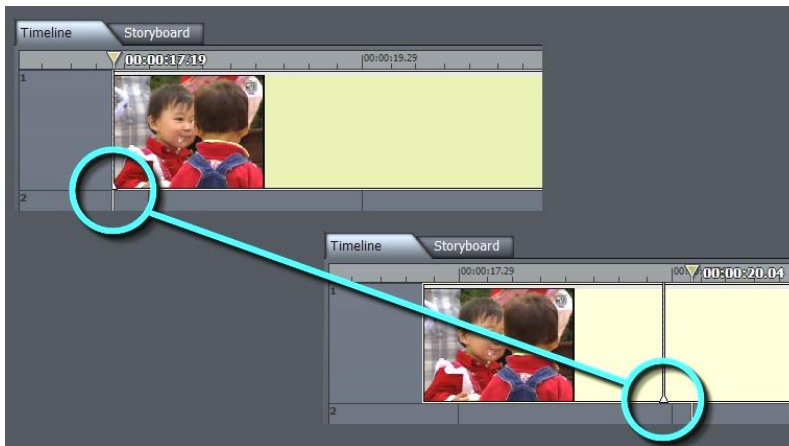


Figure 44

CHROMAKEYING

The **Media Editor** also allows real-time **chromakeying**, removing colored sections of a clip. To see this, drag a greenscreen demo file from the Media Bin's Clips folder into the Timeline – place it beneath another video clip.

Click **Overlay** to the right and return to **Control** tab. At the bottom of the controls list, click the ‘+’ next to **Chroma / Lumakeying** to reveal its options. Select the color of the green screen by right clicking in the **Key Color** selector, and, holding the right-mouse down, drag the eyedropper to the Project monitor. Click to enable **Chromakey** (the middle button of three above the color well), making this color transparent. On playback, you now have the foreground of the greenscreen video layered on top of your base clip.

Another place rich for exploration is **Tool Shed**, automating many routines used in day-to-day editing. We’ll postpone that discussion until a bit later, though.

5.5 EDIT TEXT

The Edit Text panel provides you with professional character generation tools. You can use it to design and manage great looking still and animated text and graphics for your productions (whether for Live or Edit Media projects.)

For live production purposes, Edit Text panel creations can be utilized as **Overlays**, supplied by the **DDRs**, or as custom templates for the **Text** module.

Alternatively, you can even create a custom **LiveSet** for use in **Input Setup**. And of course, exported title/cg pages can be used as graphic elements in **Edit Media** projects too.

The sheer depth of the **Edit Text** panel disqualifies it for coverage here in the Quick Start chapter, but if you have some previous familiarity with graphics applications you’ll find its intuitive nature allows you to jump right in. Please refer to Chapter 9, Edit Text, which provides much more detailed information.



Figure 45

PART II (REFERENCE)

A thorough examination of the various aspects of TriCaster, this section looks at each button, menu item, feature and control, so you can take full advantage of your system.

6 LIVE PRODUCTION TOOLS



TriCaster's Desktop is home to live production tools and features, as well as the gateway to a suite of capture, editing and title/graphics applications.

Tabs at the top of the TriCaster Desktop provide access to these various functions. In this chapter we'll begin with an overview of the LIVE Production tab, and proceed through its features in depth. Later chapters will detail the other tabs.

The main **LIVE Production** screen is presented by default when the TriCaster desktop is launched. This pane is divided horizontally into three sections: The uppermost third is the **Monitoring** section. The central section is devoted to **Live Control**. The bottom third contains **Setup and Audio** modules.

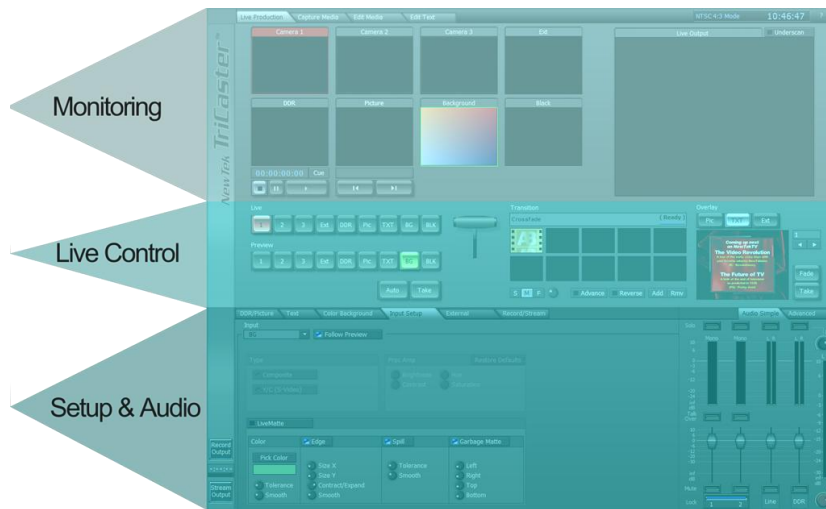


Figure 46

6.1 MONITORING

The number of video sources available varies, depending on whether you operate your TriCaster in **3-camera** mode or **6-camera** mode – see Section 5.1. (Either operating mode also allows you to use network sources via iVGA).

Naturally, the monitoring section of the **LIVE Production** screen reflects this diversity. The layout and functionality of the onscreen monitors adapts to suit the TriCaster model and **Operating Mode** you choose.

We'll consider the various layouts in turn, beginning with the simplest variant and then moving on through the more advanced models.

6.1.1.1 3-CAMERA MODE

The 3-camera mode presents dedicated (ISO) monitors for all three main video Inputs. These are labeled **Camera 1-3**. Completing the upper row is another monitors showing labeled **Ext**. This displays the video feed from an external network source (such as a **LiveText** or **iVGA** input configured in the **External** tab).



Figure 47

Beneath these, a second row of three monitors shows the current item in the two **DDR**s, and the (TriCaster generated) **Color Background**. Another monitor simply shows a computer generated **Black**. (This latter monitor may seem unnecessary, but its value will be clear momentarily).

Hint: The monitor for the source currently selected on the Live row is highlighted in red, while the current Preview row selection monitor has a thin green outline.

INTERACTIVE FEATURES

The individual preview monitors are *actually* interactive live production controls. You can use these to perform many operations that you might otherwise do using the Switcher.

Here's a list of things to try:

- Click on an unselected monitor to place it on the **Preview** row
- Click the monitor assigned to **Preview** to perform a **Take** (swapping it with the current **Live** row source and sending it to **LIVE Output**.)
- Double-click any unselected monitor to place it on the **Live** row (moving the previous Live source to **Preview**.)
- Shift + click the small monitor assigned as **Preview** or **Live** monitor to **Auto** between them.
- Shift + click any monitor to Auto to it on **Live** (sending the original **Live** source to **Preview**.)

(Observe that the **Cue** switch responds normally when you switch interactively in this manner.)

Hint: Take advantage of keystroke shortcuts mentioned in the Switcher discussion which follows.

Beneath **DDR** monitors are **Cue**, **Stop**, **Pause** and **Play** buttons. These function just like the controls in the tabbed DDR panels below.

LIVE OUTPUT

At right, a larger monitor is provided so that you always know exactly what your current program output stream is displaying. The **LIVE Output** display includes any active effects and **Overlays**.

By default, the program view is slightly cropped, just as it would be viewed on most television sets. The **LIVE Output Underscan** switch at upper right causes the monitor to display the entire frame, right to its extreme edges.

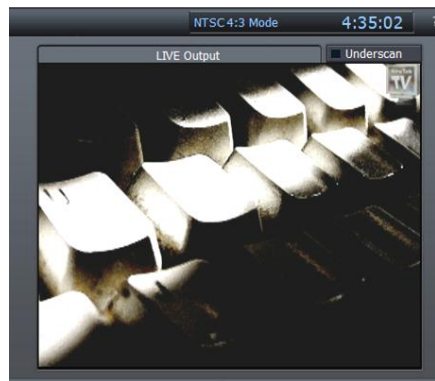


Figure 48 - TriCaster

Note: Enabling the Underscan switch only affects the onscreen monitor view. It has no effect on the outgoing video signal. It is useful to check this view, as many projection systems and modern monitors do display the full frame.

6.1.1.2 6-CAMERA MODE

This operating mode permits simultaneous live switching of as many as six cameras. However TriCaster does not display full-time ISO monitors for all six sources in 6-camera operating mode.



Figure 49

Consequently, the monitor section of the LIVE Production screen is laid out a bit differently in this operating mode.

A quad-monitor display shows two **DDR** previews, along with the **Ext** (network) video source. Along with these, a (user-selectable) Waveform/Vectorscope display is shown.

Note: In 6-camera mode, the individual monitors do not support interactive switching features.

6.1.1.3 PREVIEW AND LIVE OUTPUT

The right-hand half of this upper section is split between two large monitors:



Figure 50 – 3 Camera mode

The monitor at right shows the **LIVE Output** (the program stream) including any active effects and **Overlays**.) Just to the left is the **Preview** monitor. Normally this offers a preview of the source selected on the Switcher's **Preview** row. Additionally, however (when you are using the 3-Camera operating mode only), a drop-down menu below allows it to serve double duty as a realtime **Waveform/Vectorscope** display of the signal from Preview.

Also beneath these two larger monitors (Preview and LIVE Output) are **Bright**(ness) and **Contrast** knobs, along with switches that toggle **Zebra**, **Illegal Color** and **Underscan** options. (These features all affect both of the large monitors.)

Note: These latter controls and features are global, and affect both the large Preview and the LIVE Output monitors. Unlike the Proc Amp controls in Input Setup, however, they have no effect at all on the actual program stream.

6.2 LIVE CONTROL

This central section of the **LIVE Production** screen ultimately determines the composition of your **LIVE Output**. It contains the **Switcher** and **Transition** panels, along with the **Overlay** section (used to add graphics, titles and so on to your output stream.)

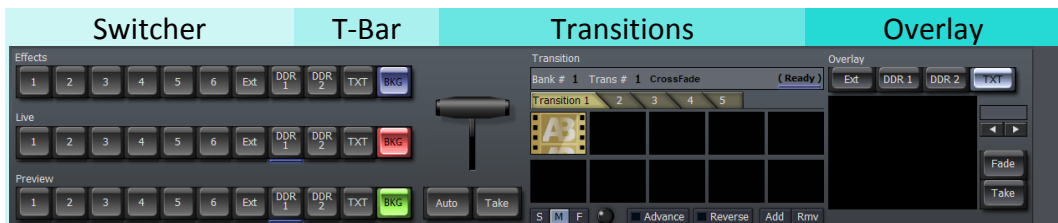


Figure 51

The three rows of the **Switcher** section (Figure 51) at left are where you manage video sources to create the main video output stream. Buttons selections in these rows assigns the source

displayed on **Live Output**, cued up on **Preview** (shown in the Preview monitor), as well as a supplementary source assigned to **Effects** (selected models only.) To the right is the **T-Bar**, used to perform a transition between the sources assigned on the **Main** and **Preview** rows of the Switcher.

Further to the right is the **Transition** panel, which allows you to pre-select from several banks of transition effects for switching between the content of the **Live** and **Preview** rows. Finally, the **Overlay** section allows you to display imagery (often a text or graphic) superimposed on the **Live** output stream.

6.2.1 THE SWITCHER AND T-BAR

Click **Auto** (or press the keyboard **Spacebar**) to apply the video effect selected in **Transition** to change from the Switcher's **Live** row source to the **Preview** row selection. Click **Take** (or the press the **Enter** key) to perform a straight cut to the **Preview** source.

To the right of the **Switcher** buttons is the **T-Bar**, which manually performs the currently active transition (whose icon is highlighted by a white border). To use the T-bar, pull it down by dragging it with the mouse pointer. When you drag it all the way to the bottom and release, the designated transition is completed and the T-Bar pops back to the top.

Hint: You can also move the T-Bar to an intermediate position, effectively using the selected transition to create a variable merge, interactively blending the two sources.



Figure 52

KEYSTROKE SHORTCUTS

You can optionally assign **Switcher** row selections using keystroke shortcuts as follows:

- **F1-F11**: Set the **Main** row selection.
- **1 – 0** and **minus** key: Set the **Preview** row selection.
- **Alt+ 1 – 0** and **minus** key: Set the **Effects** row selection.

6.2.2 THE TRANSITION BANK

TriCaster comes with hundreds of real-time transitions for use in live production. The five tabbed **Transition Banks** are pre-loaded, but you can remove any or all of the transitions* and load different ones.



Figure 53

Note: The Fade icon cannot be removed. This ensures that TriCaster always has at least one transition available for use in your productions.

Remove any transition by selecting it with the mouse and clicking the **Remove** button. Add a transition by clicking the **Add** button, or double-click in any empty well in one of the 5 tabbed **Transition Banks** to pop up a file requester.

The file requester presents you with several folders, each containing different transition categories. Double-clicking the folder shows the transitions available, with icons representing their behavior. Shift-click (or Ctrl-click) to choose several, and drag them to a **Transitions** bin.

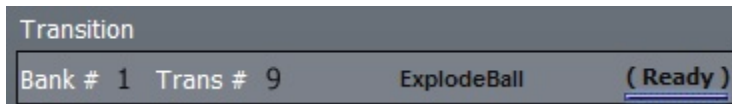


Figure 54

At the top of the **Transition** panel is a status line (Figure 54) showing the current **Bank** and **Transition #**, the transition name, and – at right – a combination progress bar and **Ready** light.

Some more elaborate transitions can take a moment or two to pre-load. The progress bar, when fully illuminated, indicates that the transition is now ready for use (during loading, its label will indicate “Loading”).

Along the bottom of the panel are additional options: **Advance** tells TriCaster to auto-advance to the next transition in turn when the current one completes. When it reaches the final transition, it cycles back to the beginning of the list. The **Reverse** option changes the behavior of the transition (a fly-in trajectory will fly out instead with Reverse selected.) There are also buttons to **Add** or **Remove** transitions from the bin.

Hint: The speed of the video effect is set by the “S, M, F” buttons beneath the first column of Transitions. The Slow, Medium and Fast options correspond to ½ second, 1 second and 2 seconds respectively.

Keystroke Shortcuts

Access favorite transitions quickly and easily with two successive strokes of the keyboard number pad. The first keystroke (between 1 and 5) selects the **Transition Bank**. The next key (between 1 and 0) selects a specific transition. (For example, pressing 1-1 (the number pad key 1, twice) pre-selects the Crossfade. Pressing 3-0 would preset the last transition in the third Transition Bank. (NumLock required)

6.2.3 OVERLAY



Figure 55

Completing the **Transitions** section of the screen is the **Overlay** panel.

Think of this section as a final opportunity to add something *on top of* the combined result of all other elements of your program stream just before final output.

Hint: The number display/entry field (above the Fade and Take buttons) and the arrow buttons beneath it permit you to choose a specific entry from the Text section.

Two more buttons, **Fade** and **Take** are found beside the **Overlay** panel's preview pane (which shows the current source you have designated). These control the way the overlay is performed.

FADE AND TAKE

Click **Fade** to display the **Overlay** on the **LIVE Output** stream using a dissolve effect (using the current **Transition** speed setting). Click again to fade it out. Likewise, clicking **Take** cuts the Overlay on and off the screen.

Overlay **Fade timing** is controlled by the **Transition** speed. This ensures that the Overlay transition is performed in sync with **Switcher** transitions. Try this: Select the **Crossfade** transition in the **Transitions** section, and set up a **Text** overlay that introduces the clip currently selected in your **Preview** row. Press the 'a' key, and a seamless transition from your **Live** source to the **Preview** source occurs, with perfectly timed introductory overlay display. (After a moment or two, press 'f' on the keyboard to remove the title from view.)

Alpha Channels

Of course, if the source you choose covers the entire video frame, it will completely obscure the primary output (hiding all other elements). Unless you want to bring in a full screen billboard graphic, this would be undesirable.

Fortunately, overlays fully respect transparency levels (or “alpha channel” values) of the selected (Overlay) source. Thus the primary display will ‘peek through’ transparent sections of the overlay.



Figure 56

Most of TriCaster’s **Text Templates** have transparent regions, and are well suited as overlays. Or you can use many graphic file formats (32bit files, with embedded alpha channel) in the DDR modules in similar fashion. When enabled as an **Overlay**, the embedded transparency of images and clips in the **DDR**s will be respected.

Hint: PNG (Portable Network Graphics) or Targa32 files serve well as file format choices for still image overlays.

KEYSTROKE CONTROL

A number of very useful keystroke shortcuts are available:

f – Fade the Overlay (on/off toggle)

d –perform a **Take** of the Overlay display (on/off toggle)

s –**Take All**: swap the Main and Preview sources AND toggle the Overlay display on/off

a - **Fade All**: Fade the Overlay on /off and simultaneously Auto the Main and Preview sources.

6.3 SETUP AND AUDIO SECTION

This next section, comprising the bottom third of the screen, contains two tabbed rows of panels.

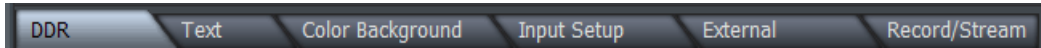


Figure 57

The larger set of tabs at left (Figure 57) provides the means to configure, modify, and in some cases create the video elements and sources comprising your program material – as well as recording it.

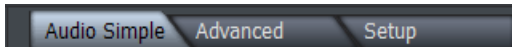


Figure 58

The **Audio** tabs at right (Figure 58) offer similar configuration options and control over the audio part of your production. Let's examine each tab in turn, beginning at the left.

6.3.1 DDR 1 & 2

TriCaster's **DDR** modules are media players, designed to permit you to integrate video and still imagery (or sound files) into your live presentation with utmost simplicity and professional style.

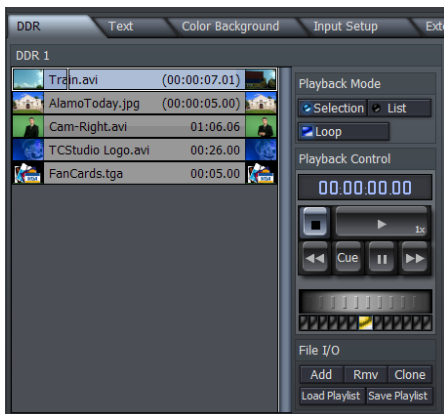


Figure 59

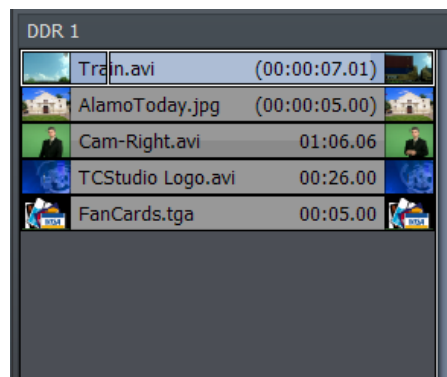


Figure 60

These modules are located in the **DDR** tabbed pane. When you click this tab, your TriCaster will display two **DDR** panes. You can preload content and control its behavior on playback using the controls and options shown.

You can play multiple clips, single clips, and even have TriCaster perfectly roll your **DDR** on **Cue**, as it can ‘listen’ for **Switcher** commands. These powerful features deserve close attention, as they can help you achieve spectacular presentations.

THE PLAYLIST

The largest part of the **DDR** modules is the **Playlist** pane (Figure 60), where clips or images you want to display as part of your presentation are organized and trimmed.

The natural playback order for items in the **Playlist** is top-to-bottom. You can easily rearrange your Playlist sequence by dragging clips up or down.

TriCaster’s **DDRs** accept video clips in a wide array of standard formats, including AVI™, Quicktime™ many and other popular types. Similarly, they accept most common image formats, including JPEG, BMP, TARGA, PNG, and so-on. To add a clip to the playlist, click the **Add** button in the nearby **File I/O** section. This pops up a file selection window. To quickly add a single file to the playlist, simply double-click it in the file window.

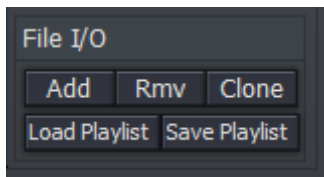


Figure 61

Alternatively, you can add many files at once by using **Shift + click** (click on a file, then hold Shift down while clicking another, to multi-select all files between the ones you clicked). Then click the **Add** button at the bottom of the file window. Yet another very useful option is **Ctrl + click** selection; Single-click as many files as you like with the Ctrl key depressed – when you click Add, they will be added to the playlist in the order you clicked them.

Note: Still images added to the playlist are automatically scaled to fit the live output format.

Click **Rmv** (or press **Del** on the keyboard) to remove the selected clip(s) from the playlist – but not from the hard drive, of course. **Clone** duplicates a clip entry in the playlist, while **Load Playlist** and **Save Playlist** allow you to create and easily recall elaborate DDR setups.

TRIMMING CLIPS IN A DDR

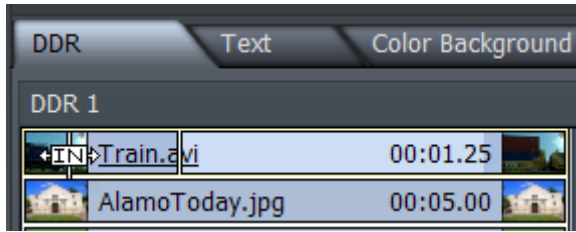


Figure 62 – Trimming

The **In** and **Out** points (for playback) default to the first and last frames of clips added to the **DDR**. When you place the mouse-pointer over the left-hand thumbnail icon for a clip, it changes to show <-[In]->. Drag to the right to move your **In Point**. Likewise, drag toward the left above the right-hand thumbnail to adjust the **Out point**. You can observe the effect of trimming in this fashion by watching the monitor above.

Another way to modify the **In** or **Out Point** is to use the large jog wheel just below the transport control buttons (**Play**, **Pause**, etc.) Stop on the desired frame, and then press 'i' or 'o' on the keyboard to set in and out points, respectively. (Press **Alt + i** or **Alt + o** to restore the *original* start or end points.)

Hint: You can move through clips in precise single frame increments using the keyboard left and right arrow keys; Ctrl + arrow moves in 5 frame jumps.

A video clip without associated audio is shown as gray (or blue when selected) in the list. Clips *with* audio are two-tone, with a darker band horizontally across the bottom.

You can perform some sophisticated operations in the playlist. If you have a clip with a needed duration, but want to slide over to a different section, hold down the **Shift** key while dragging above either thumbnail. You can even set up *split edits* by setting an **In** or **Out Point** to the desired location, and then holding the **Ctrl** key while dragging across the thumbnail to adjust only the audio segment of your clip.

SELECTION AND LIST MODES

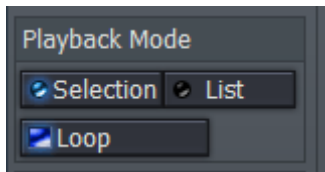


Figure 63

Selection and **List** modes modify the playback behavior for a **DDR**. **Selection** mode effectively issues a **Stop** command *when the end of each clip in the playlist is reached*. Each clip is also treated as distinct if **Cue** or **Loop** is applied. **List**, on the other hand, treats the entire Playlist as one extended clip, proceeding from one video to the next until it reaches the end.

Note: changing Selection or List modes will stop a clip if one is playing.

DDR PLAYBACK CONTROL

Also right of the **DDR** playlist is the **Playback Control** panel. This important section provides controls to **Play**, **Pause**, **Stop**, and most importantly, **Cue** the DDR to auto-roll videos as they're needed.

The time display at the top indicates either the selection or the playlist total run-time depending on your **Selection** or **List** setting above (under **Playback Mode**).

If you click on the time counter while **Play** is stopped, you can change this to reflect the time *remaining* -- perfect for indicating a countdown to your presenter.



Figure 64

Hint: A diminutive version of the most important of these controls is also located under the DDR preview monitors above, permitting you to control a DDR without actually opening the DDR tab.

The transport controls provided include **Fast Forward**, **Stop** and **Rewind** (affecting either the entire list or just a single clip, depending which mode is selected). A large knurled **Jog Wheel** is also provided.

Hint: Clicking Stop a second time jumps to the first frame of the selected clip if clicked a second time. If in List mode, Stop will jump to the beginning of the first clip. Loop will continue to play an entire sequence of clips in List mode, and will repeat a single clip in Selection mode.

PLAYBACK SPEED

The blue LED ‘lights’ below the **Jog Wheel** show the current speed, whether forward or reverse. Click directly on one of these LEDs to jump to that speed increment.

J, K, L HOTKEY CONTROL

The keyboard shortcut **k** will also play the **DDR** playlist (to be precise, the **k** shortcut toggles **Play/Pause**). Pressing the neighboring speeds up the current rate of play – pressing it again speeds it up even more. Conversely, pressing the **j** key slows down the current rate of play; depending on the current rate of play, it will even reverse playback. Pressed repeatedly, the **j** key produces fast reverse playback (See Appendix E for the full list of hotkeys available).

6.4 TEXT

When producing newscasts, presentations and videos, it’s essential to identify speakers and to present key facts both visually and verbally. TriCaster provides several methods of quickly creating great looking text and graphics pages for live and edited projects. As this chapter focuses on **LIVE Production**, we’ll discuss the **Text** panel tab nested in that section first.

The **Text** panel features an easy-to-use template-based system. This lets you quickly call up and modify professional looking titles on the fly, adding your own customized graphics and logos.

Text Templates are provided in lower third as well numerous full-screen page styles. Template menus list the available entries by **Template Theme**, allowing you to easily locate templates having a similar graphic style. This is useful with developing a “look” for your program.

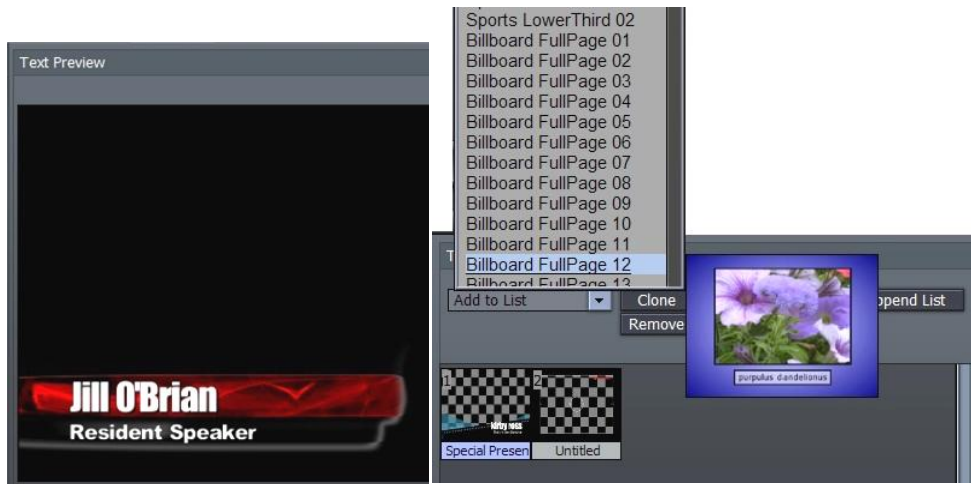


Figure 65 – Text tab

The **Text** panel is divided into two halves – a **Preview** (and Edit) pane at left, and the **Playlist** section at right.

THE PLAYLIST

The **Playlist** section contains an **Add to List** drop-down menu. Click in it to display a long list of available templates. As you run the cursor over the list, a thumbnail for the entry is displayed (use the scrollbar at right to see more templates.) Click an entry to add it to the playlist area below.

Once you add a page, click on its thumbnail icon in the playlist to view it in the Overlay and Edit window at left. (When multiple files are selected, the page in the edit window will have a highlighted name in playlist.)

WORKING WITH TEMPLATES

To edit the selected title page, click on a line of text in the Edit pane to present a text entry field; Replace the current text with your own. When the principle line of text or primary title is updated, the page name automatically updates in the playlist. This makes it easier to quickly choose a specific page to display.

Note: text in the templates is pre-formatted and pre-sized, so be careful text you enter is not cut off for some title pages.

Often you will wish to use a consistent style for numerous pages. Load the template page once, click the **Clone** button (above the playlist) as many times as required, then modify the clones.

*Hint: Double-clicking a page in the **Text** playlist promotes it to the **Overlay** window, where it awaits display on Live output. You can use the previous/next gadget to the right of the Overlay window if your pages are already sequenced in the Text playlist.*

CUSTOM TEMPLATES

To modify a template using your own logo or imagery, you can choose from templates prepared for that purpose – a series of these are found in the **Insert Image** Template theme group. Click on the template image in the **Preview** window, and a file window pops up – navigate to the image file you wish to use, and it will replace the default one. There is also a convenient “**Add Image ...**” entry at the top of the list.

Note: The inserted imagery can be created in any image-editing software (such as NewTek Aura™ or Photoshop™) that supports alpha channel transparency. This would include 32 bit Targa, TIFF, GIF, or PNG files where a logo or graphic cutout is set against a transparent background. Add as many of these customized templates as you wish to your playlist.

Information on creating custom templates in Edit Text can be found later in this manual in Section 9.2.2, under Export Options.

LOAD, SAVE AND APPEND

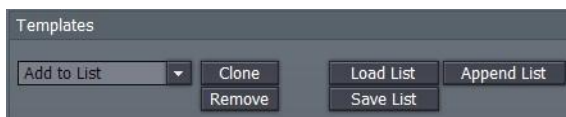


Figure 66

A list of modified pages you have prepared can be stored by clicking **Save List** -- save it with a name descriptive of the project. TriCaster defaults to its own **Playlists** folder, but you can save this file anywhere on the system.

Load a playlist by clicking on **Load List** and navigating to the folder where you saved the file. **Append List** will append the current pages in the playlist pane to a previously saved playlist that you choose in the file dialog window.

6.5 COLOR BACKGROUND

For quickly creating colored backgrounds, TriCaster includes a digital background generator. In addition to designing your background, this tool is also capable of quickly saving and recalling up to 10 custom backgrounds. The **Color Background** tab is where you will find these features.

Along the left side of the tabbed panel are the 4 types of backgrounds you can generate. **Solid** uses one color across the screen, **Horizontal** uses two colors in a smooth gradient applied from left to right, **Vertical** creates a smooth gradient between top and bottom, and **4 Corner** allows you to choose distinct colors for each corner, averaging values toward the center.

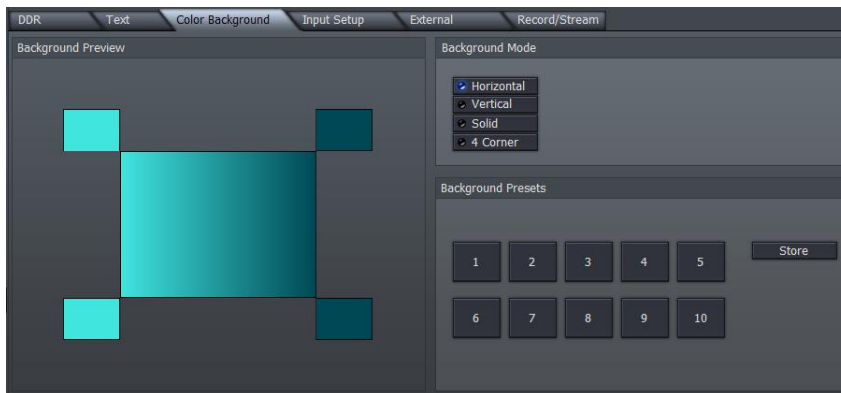


Figure 67

Click on a type to create a background, say, **Horizontal**. Click the upper-left square color well beside the background preview to launch the **Color Picker**, and select a color. This will be your left color. Now click on the upper-right square to choose another color. Once the background is just the way you like it, save it by clicking on the **Store** button -- select one of the 10 preset buttons, and you can recall it later with a single click.

Hint: The 4 color types also dynamically store the last color selection, so it is possible to have 14 combinations ready for use.

You can also right-click on a color well, and (keeping the mouse button depressed) drag the mouse to any other part of the screen. The mouse pointer becomes an eyedropper, ready to pick up the color beneath it when you finally release it.

It is helpful to know that the color well updates in realtime as you drag, allowing you to preview the result before committing to it. You can use this ability to select a color from one of TriCaster's video monitors, permitting an exact match to subject matter in a clip.

Hint: One of the principal uses of these backgrounds is to provide color behind text, keyed images, or for Effects.

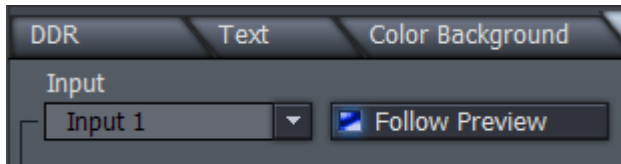
6.6 INPUT SETUP



Figure 68

TriCaster dramatically simplifies the ability to input live cameras into your production. All connected cameras (and other sources as well) can be set up and modified in a number of very useful ways. This permits them to be configured just as you wish when you need to display them.

6.6.1 INPUT SELECTION



Use the **Input** drop-down menu to select which of the many sources available to TriCaster you wish to adjust. The **Input Setup** panel always displays the settings for the input selected here.

If **Follow Preview** is enabled (blue LED illuminated), the current **Input** selection automatically updates whenever you select a new source on the Switcher's **Preview** row. This is a convenient way to quickly address any adjustments you wish to make on the fly during a live presentation.

Note: Certain controls in the Input Setup pane are ghosted when they are not relevant to the type of source selected at the moment. For example, Proc Amp controls only affect live video sources. For this reason, they are inaccessible when you select Ext, DDR 1, DDR 2, or BKG (Background).

6.6.2 CONNECTION TYPE

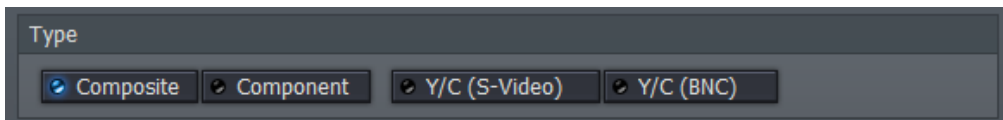


Figure 69

For camera inputs (or other external analog source), select one of **Composite**, **Y/C (S-Video)**, **Y/C (BNC)**, **Component** or **SDI** for the **Type**, as appropriate for the sources you have available. Note that only TriCaster BROADCAST has an SDI Connection Type option; as it does not offer a Y/C (S-Video) input, use Y/C (BNC) when required.

Hint: An S-Video connection will produce a better-looking result than Composite. In turn Component is better still; SDI trumps them all.

6.6.3 PROC AMP

Each camera can be selected in turn, and each has full **Proc Amp** (processing amplifier) controls, to make your image look its best. After selecting a specific **Input**, you can then refine how the camera looks on screen. (The Proc Amp can also help you to balance the signal from dissimilar cameras so they match reasonably well.)

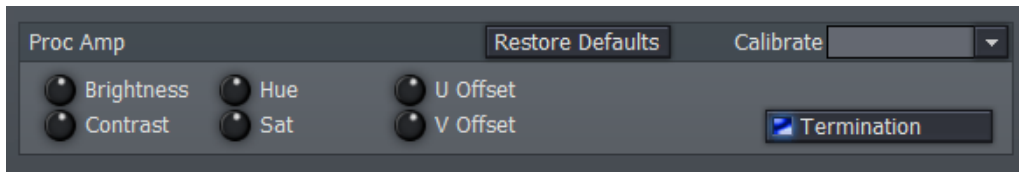


Figure 70

There are four basic adjustments in TriCaster – **Brightness**, **Contrast**, **Hue** and **Saturation**.

The first two controls (**Brightness** and **Contrast**) are familiar to all of us, and really need no explanation. **Hue** adjusts the master color of the video signal from the attached source, swinging the entire image through the color wheel's spectrum.

Saturation controls the intensity of color in the image. Zero saturation produces a black and white picture; increased saturation results in richer colors. However the nature of video display and standards is such that over-saturation can quickly result in 'illegal' video signal values.

Illegal levels manifest themselves in all sorts of nasty ways, including smearing and 'crawling' colors, and even audio issues – so be conservative when raising Saturation. (Your TriCaster system provides **Waveform\Vectorscope** monitors, an invaluable way to accurately monitor the video signal to avoid this sort of issue.)

All control knobs decrease value when you drag the mouse to the left over them (holding down the left button) and increase when you drag to the right. Double-click a knob to restore the default setting for that one parameter. Clicking **Restore Defaults** clears all of your adjustments, resetting the currently selected input to factory default values.

Hint: Control knobs in TriCaster have a defined response to mouse movement, but very fine adjustments can be made by holding down the Ctrl key while turning a knob. Rotation of the knob relative to mouse movement is then reduced by a factor of ten, allowing much greater precision.

U Offset and **V Offset** offer another approach to adjusting color for analog video sources:

- The U portion of the video signal carries the blue and yellow color information. When you adjust the **U Offset**, you adjust only the blue/yellow portion of the video signal. Rotate U Offset clockwise to shift the signal toward blue, counterclockwise to shift the signal toward yellow.
- The V portion of the signal carries the red and green color information. Adjusting it affects only the red/green portion of the video signal. Rotate **V Offset** clockwise to shift the signal toward red and counterclockwise to shift the signal toward green.

CALIBRATION

TriCaster's **Calibrate** drop-down menu eases the proper calibration of video inputs.

If you are adjusting a camera, feed a color bar test signal via the camera selected on the **Preview** row, then select either the **75%** or **100% Bars** entry in the menu (in NTSC regions 75% color bars are the norm, while non-NTSC regions generally rely on 100% bars.)

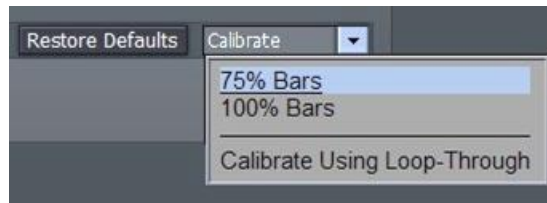


Figure 71

Note: It is important that the SMPTE color bar signal contains a pluge ("Picture Line-Up Generation Equipment") section – a three-barred black section beneath the larger red bar, for proper reference.

When you select either **75%** or **100% Bars**, TriCaster adjusts all the **Proc Amp** controls to bring the signal into alignment. Of course, you should judge for yourself if the new settings look just right. If you are calibrating a video deck, play a tape with color bars on the deck and select the appropriate input as the source for the Proc Amp.

Calibrate Using Loop-Through is a shortcut to correcting all inputs simultaneously. It uses the values obtained from the initial calibration of a single input, and repeats them for all other similar inputs. (So, the adjustments derived by selecting one composite input and calibrating it can be repeated to all other composite inputs in the system.)

As mentioned above, TriCaster also brings precise signal monitoring with a field-accurate **Waveform** monitor for monitoring both luminance and chrominance (Y/C), or to quickly check just the brightness (Y). The **Vectorscope** helps to align each color bar in the proper graticule box.

Hint: TriCaster also provides a color bars image in the Pictures folder – supplying it from a DDR as a ‘regulation’ display can make downstream color phase calibration easier – useful if you plan to integrate the output of your TriCaster with other video sources using external equipment.

6.7 LIVEMATTE

LiveMatte is TriCaster’s powerful realtime keying system for live production. Keying has proved a popular and powerful method of combining two images, superimposing one above another, whether still images, video clips or live camera shots. The process involves revealing the background image by eliminating a portion of the foreground image (effectively cutting a digital ‘keyhole’ in it.)

There are two popular means for determining what part of the foreground image will be treated as transparent, and they are referred to as ‘luma-keying’ or ‘chroma-keying.’ The first is based on the foreground’s brightness (luminance) values, while the second depends on the color (chrominance) values.



Figure 72

For anything other than titling, chromakeying is the more common method in use today. When keying in video and film, for example, the foreground footage is often shot in front of a blue or a green screen. (When you see a television meteorologist in front of a weather map, that person is actually standing in front of a blue or green backdrop. The colored background is chromakeyed to expose the computer-generated background map.)

Basic **LiveMatte** effects are configured in a dedicated section of the **Input Setup** panel (several extended LiveMatte options are presented using **LiveSet** controls, discussed in context a bit later.)

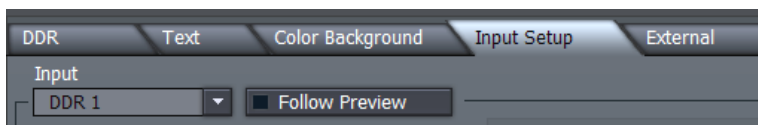


Figure 73

First, you need to assign the source for the **LiveMatte** effect using the **Input Setup** panel's drop-down **Input** menu, whether a live camera input, a clip in a **DDR**, or even the display from another computer on the network using **iVGA**.

When the **Follow Preview** switch is enabled (the default configuration,) the primary source for the effect is the one selected on the Switcher's **Preview** row. (This is useful as it allows you to set up the effect out of view.) Of course you can disable this default, and use the menu to select any suitable source.

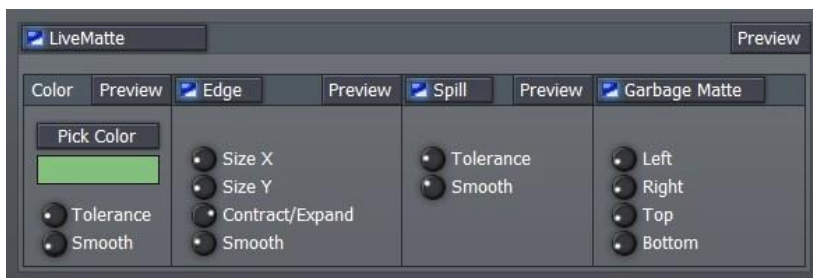


Figure 74

The next thing to do is pick the “key color.” We’ll focus on chromakeying first as this is the default **LiveMatte** operation (luma-key effects fall under the options available from the LiveSet panel, discussed later.)



Figure 75

Chromakeying removes a specific color from the foreground image. This color is chosen using the **Pick Color** button and the associated rectangular 'color well' beneath it.

To choose a key color, right-click on the color well and - keeping the mouse button depressed - drag the eyedropper tool above one of the monitors to choose the color you wish to remove; then release (or, you can click the

Pick Color button and do the same thing.)

Note: You could use the popup Color Picker panel by left-clicking the color well, but it's usually simpler to get it right by choosing the color directly from the screen.

Besides choosing the type of key or the color, the **LiveMatte** section provides settings to fine-tune your matte, as follows:

Tolerance determines the range of color to include as transparent. A low tolerance removes only pixels with values very close to the one chosen. As you raise the tolerance, you extend the range of values on either side of the key color you chose.

For basic LiveMatte compositions, the background scene is supplied by the source selected on the Switcher's Effects row.



Figure 76

Smoothness helps to remove the sharp edges in the key, softening the blend between the remaining foreground and new background imagery. Low values work best, because too much smoothing can cause unwanted transparency in the foreground image.

The **Edge** controls allow you to explicitly refine the boundary zone at the edge of the matte. The **Edge** button is a toggle, either enabling or disabling the settings beneath.

The **Contract/Expand** knob fine-tunes the key by allowing you to contract or expand the matte. (Contract is very also helpful in removing artifacts in compressed video.)

Contracting too much can erode fine detail, such as wispy hair; aggressive expansion can result in the key color reappearing in places. **Size X** and **Y** provide independent control over vertical and horizontal expansion and contraction.

The term **Spill** refers to key color unintentionally reflected (or spilled) onto the foreground subject. It's not unusual for a little green spill to occur on the shoulders of someone in a greenscreen setting, for example.

When enabled, **Spill** lowers the saturation of the key color in the foreground, eliminating or at least reducing it.

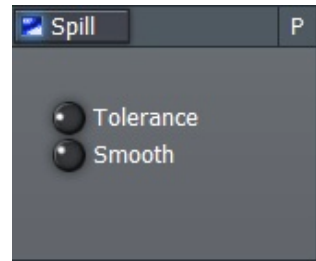


Figure 77

When keying techniques are employed, it's not unusual to find unwanted inclusions in the background. The offending items might be lighting or other set hardware, or something as simple as a wrinkle in the greenscreen.



The **Garbage Matte** label owes its name to techniques used to remove such unwanted 'garbage' from the scene.

Left, Right, Top and Bottom knobs control 'matte cropping', and can 'tighten in on' the foreground subject, eliminating various problems of this sort.

Figure 78

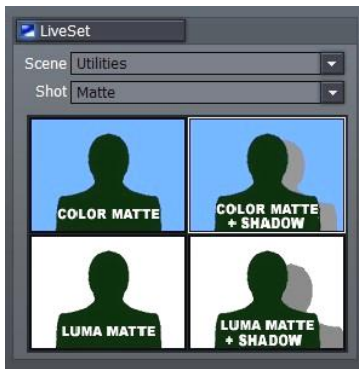
Hint: The best method for optimizing the key is to begin with the best incoming Connection Type possible. Then, rotate all four knobs fully to the left (off) and adjust first Tolerance, then Edge settings, Smoothness, and lastly Spill.

6.8 LIVESSET

TriCaster's amazing LiveSet™ virtual set technology provides very powerful and professional capabilities. Like most super heroes, TriCaster's **LiveSet** panel hides its superpowers behind a mild-mannered and unobtrusive exterior.

Don't be fooled by this apparent simplicity. This panel may be small, but it holds ability that outstrips systems costing many times the price of your TriCaster and your automobile put together.

6.8.1 UTILITIES – MATTE OPTIONS



Before getting into a full discussion of the ability **LiveSet** brings to your system, let's complete our discussion of **LiveMatte** effects by covering supplemental keying options located here.

LiveSet's drop-down **Scene** menu is our first stop. Choose the **Utilities** 'scene'. Next, use the **Shot** menu to select the **Matte** entry (the **Matte Blur** selection operates similarly, but provide different levels of blurring to the background.) When you do so, the interactive **quad display** beneath these menus will display four options.

Figure 79

Click the **COLOR MATTE + SHADOW** thumbnail in the quad display to add a shadow to foreground of the **LiveMatte** effect you set up previously (The **LiveMatte** switch must be enabled as well.) Clicking **COLOR MATTE** restores the default color-based **LiveMatte** effect.

The **LUMA Matte** option invokes a **LiveMatte** effect based on brightness values, instead of color. For these cases, set the **LiveMatte** 'key color' well to either white or black, and then adjust the other controls and settings as discussed above.

LUMA MATTE is principally useful for situations requiring you to key title slates provided as white text on a black background. For most other purposes, **COLOR MATTE** will produce a better result. (**LUMA MATTE + SHADOW** is similar to the **COLOR MATTE** option above.)

6.8.2 OTHER UTILITIES

The **Scene** menu item **Utilities** contains a diverse multitude of handy functions to enhance your live video stream.

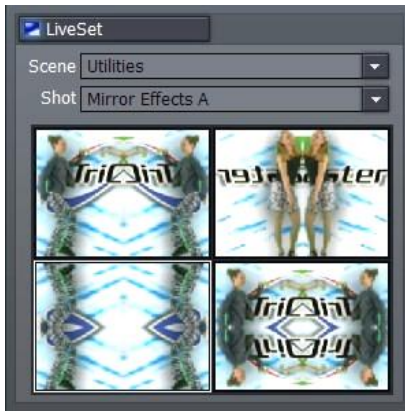


Figure 80

Flip your video, stretch or squash it, apply wild effects to it, letterbox it and change its aspect – the sky is the limit. Experiment to your heart's content.

Patiently waiting to do your bidding on a moment's notice, TriCaster's Utility effects can be lifesavers.

Suppose the boss insists you add that widescreen clip from last year's Death Valley vacation (the whole family spread out like parched lobsters in front of the Winnebago) to the gala presentation for the annual meeting.

"But Boss," you decry, "That shot is HD, 16x9 aspect, and this production is 4X3 standard definition. I'll have to crop out Aunt Minnie and cousin Doofus, or you'll wind up looking like a 97-pound weakling in front of the Board of Directors!"

Utility LiveSets to the rescue ...

Drop the hideous clip in a DDR, select Utilities in the Scene menu, and Aspect Ratio as the Shot setting. Then, with a single click of the wondrous "16:9 to 4:3 Boxed" button in the quad selector, the whole family appears in cinematic splendor, perfectly sized (and sunburned to a crisp).

You're a hero. You get a promotion, and wind up marrying the CEO's daughter ... all thanks to TriCaster. ☺

6.8.3 LIVESET POWER

We’ve barely scratched the surface of what **LiveSet** can do. The **Scene** menu reveals numerous other useful and varied options, and product updates may bring new additions. Let’s consider a few of the entries it provides to get the idea.

Note as you scroll down the **Scene** listing, a convenient fly-out panel shows a thumbnail representation for each selection.

One item is **Double Boxes**. This Scene group permits you to place two of TriCaster’s video sources, (whether live cameras, iVGA displays, or DDR content) in side by side panels on the screen.

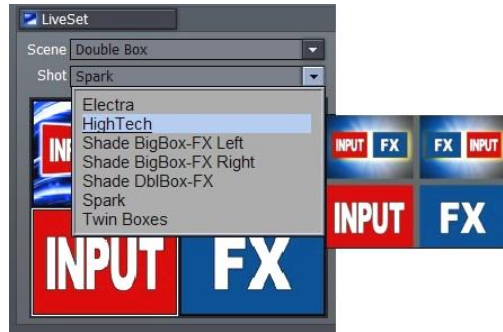


Figure 81



Figure 82

While these effects can loosely be classed as ‘picture-in-picture’ effects, they go far beyond the norm. Great looking 3D frames surround your video, with gorgeous professional backdrops. Experiment with these and you’ll quickly get the idea.

Many of TriCaster’s effects take two inputs, as in this case. The first **Input**, or primary source is determined by your selection in the main **Input** menu of the **Input Setup** panel. When appropriate, the second video source is generally designated by the **Effects Row** selection in the **Switcher**.

The **Spark** set from the **Double Boxes** list is shown in Figure 83. Notice that when you select it, the previously blank quad panel beneath is activated.

This panel is much more than just an enlarged thumbnail or even a preview, however.

Again, this quad panel provides four interactive options. By clicking any one of the four squares, you determine how the effect will be applied.



Figure 83

In this case (**Double Boxes**), you can swap the sources shown in the boxes by selecting one of the upper two quadrants; or fill the screen with either source with another click!

Note: when the quad thumbnails provide matching PIP and full screen alternatives, you can swap from one to the other live, even without using the Switcher!

6.8.4 MORE LIVESET

LiveSet may fall (slightly) short of miraculous, but it comes within shouting distance. Even so, at risk of the suspense killing you, we're going to postpone further discussion of **LiveSet** here.

As tempting as it is to discuss **LiveSet** right now, it's so cool we decided to give it a chapter of its very own. If you really, really can't wait, we'll understand if you skip ahead to Chapter 10. For those with a little more self-control, here's a little teaser. 😊



Figure 84

(If you do decide to stay here with us, please be assured we'll keep you company all the way, and the wait will be rewarding.)

6.9 EXTERNAL

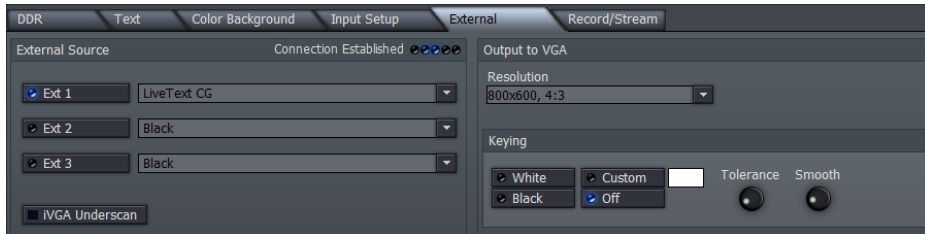


Figure 85

The main **External** tab provides the controls and options necessary to permit you to do something revolutionary. Among other things, several different and very useful external inputs can be selected as video sources in TriCaster's **LIVE Production** environment.

Available external source include displays from network connected (Windows™ or OS X®) computer systems (via iVGA), and text and graphics overlays from LiveText™. The active **Ext** (External) source is available on the **Switcher**, and of course can be captured or streamed, as well. Perhaps best of all, **External** sources can optionally be passed through the **Output to VGA** section at full resolution, to supply very clear imagery on high resolution display devices.

Note: Output to VGA does not degrade the original pristine (high resolution) source, as there is no need to first scale the source down to standard video resolution.

6.9.1 USING iVGA

For an iVGA source to be recognized by your TriCaster as an External Source, you must first install a small iVGA client program a computer on your network. iVGA client programs are supplied for Windows 2000, Windows XP or Mac OS X. You will find the iVGA installation files in the C:\Tricaster\TriCaster iVGA folder.

iVGA FOR OS X™

The iVGA installation for Apple OS X® system is supplied as a zipped disk image (.dmg) file. To install it, first establish a network connection between your Mac and TriCaster systems. Then copy this file to your Mac desktop.

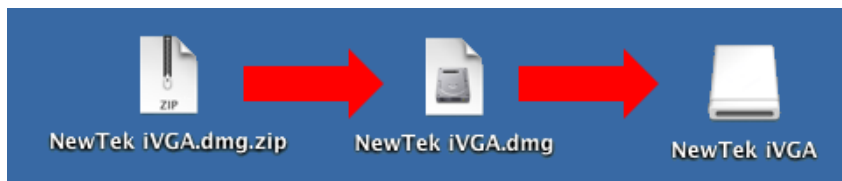


Figure 86 – mounting the iVGA disk image

Double-click the Zip file to decompress it, and then double-click the .dmg file to mount it. The NewTek iVGA icon shown above will be placed on your Desktop. Open it (by double-clicking, and you will see two files in a Finder window – the readme file, and the iVGA client program.

Drag the iVGA icon from the finder to your Applications folder.

Run it by double-clicking the icon, and in a moment or two the iVGA swirl will be placed in your Dock, and an onscreen dialog reporting ‘iVGA Ready and listening!’



Figure 87 – iVGA Disk Image content

The new source (your Mac screen) will be listed for selection in your TriCaster’s External Sources menu!

When iVGA is running, the icon in the Dock has a menu you can access by right-clicking on it:

1. Engaging **Privacy Mode** prevents the client display from appearing accidentally on the TriCaster display when you don’t want it to.
2. **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 will likely be only one frame per second.)



Figure 88

3. You can set iVGA to show either of two monitors, when you have more than one attached.
4. The **Options** list contains settings for **Open at Login**, **Remove from Dock**, and **Show in Finder**.

IVGA FOR WINDOWS®

The iVGA installation for Microsoft Windows® systems is supplied as an executable (program) file.

To install it, first establish a network connection between the Windows client system and the TriCaster. Then copy this file to the client system.

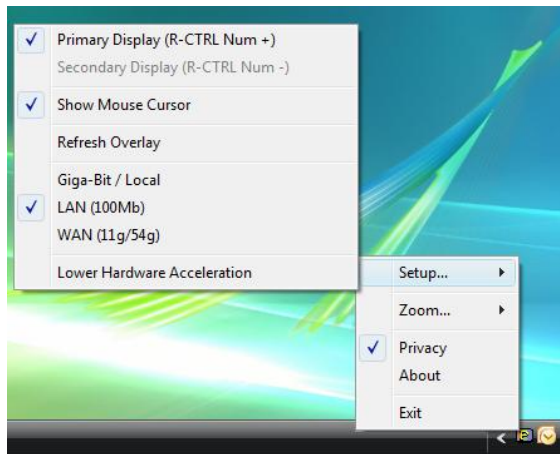


Figure 89 – iVGA context menu, Windows® version

Note: iVGA will run from anywhere on the client hard drive, but you might wish to install it in the Program Files folder – or Program Files (x86) under a Vista® 64bit version of Windows.

Run iVGA on the client computer by double-clicking its icon. A smaller icon will be added to the Windows task tray. When this computer is set in TriCaster's External Source panel as the active source, the iVGA icon begins cycling -- alerting the operator this is a live input.

Right-clicking the little icon reveals a menu with various iVGA options (Figure 89):

1. **Setup** 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.

2. **Refresh Overlay** is there in case you need to quickly reset iVGA. Selecting this is equivalent to stopping and re-starting iVGA.

3. This is also where you set the rate of transfer your network can safely handle:

a. **Giga-Bit/Local** network type provides the best transfer rates.

b. A standard LAN (**100 Mb**) Ethernet connection (or crossover cable) would usually outperform wireless networking (**WAN**).

Slower connections may drop frames (even in extreme cases, where network capability is low or unreliable because of other traffic iVGA would still be useful for static displays.)

c. **Lower Hardware Acceleration** may help in some cases where a client application uses display technology that would otherwise not work with iVGA. (Normally this can be left disabled.)

4. **Zoom** allows you to magnify an area of the Windows display, which can help when fine detail is important for an application display on the screen. The portion of the screen sent to iVGA output is determined by the position of the cursor on screen. You can set zoom to 150, 200 or 400 percent, or disable it. When you do not want your zoomed view to move once set, you can lock zoom position with a hotkey — Right Ctrl + Numpad 9. The hotkey is a toggle — use it again to cause the display to track the cursor again (this is useful to re-position the display, too.)

5. **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.

6. Lastly, selecting **Exit** shuts down the iVGA client, and removes the icon from the task tray.

6.9.2 USING LIVETEXT



Figure 90 – LiveText LIVE Output pane

As we noted in the Quick Start chapter, at Section 0 (LiveText™), a workstation on your TriCaster network with LiveText installed serves as a dedicated CG and Title solution for your TriCaster presentations.

When running and connected, LiveSet will be listed in the External Source menu, similar to an iVGA source.

For more information on installing and using LiveText, please refer to its manual.

6.9.3 EXTERNAL SOURCE

The left half of the External tab is home to the **External Source** panel. This is where you can select from available external sources.

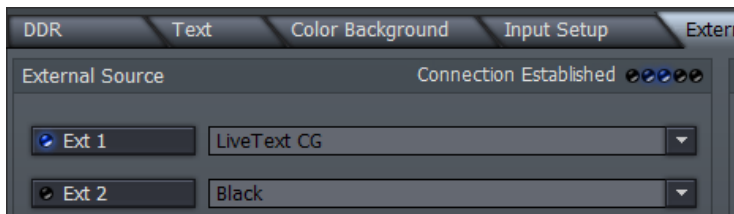


Figure 91

Once launched, the **iVGA** client and **LiveText** publish their availability across the network to the host TriCaster system. TriCaster then adds the external source to the list of potential live inputs in the External Source drop-down menu(s), making them available for selection.

Once the **External Source** is selected, simply click the **Ext** button to activate it on any of TriCaster's Switcher rows. TriCaster should find all iVGA or LiveText clients on the network, listed by their computer name.

Note: As with networking in general, it is imperative that each computer on the network have a unique name. If there are two computers named 'Calypso' running the client, there is no guarantee TriCaster will detect both.

The active External source is also listed (as Ext) in the **Input** drop-down menu of the **Input Setup** tab. This means it can be treated like any other video source, including the application of keying or other effects (**Proc Amp** tools are not available for an External source, however).

6.9.4 IVGA OVERLAY

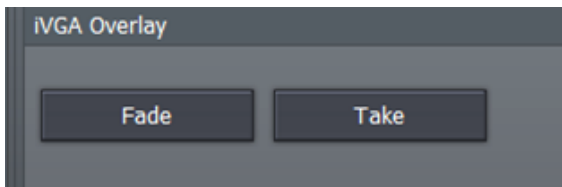


Figure 92

The **iVGA Overlay** panel (beneath the iVGA input setup menus) contains only two buttons, **Fade** and **Take**. These behave in identical fashion to the buttons by the same name in the main **Overlay** panel, with one exception:

Clicking either of these buttons does not overlay the current iVGA source on TriCaster's **LIVE Output**, as the normal Overlay does. Sources running through the **Switcher** (or its downstream **Overlay** channels) are at standard video resolutions. The same thing is true for iVGA sources mixed into the production through the Switcher. Any computer (iVGA) display used in this manner *must* be scaled down to be acceptable to standard devices connected to TriCaster video outputs.

However – the **iVGA Overlay** function does not appear on the *normal* video output. It is overlaid only on the signal going to the (higher resolution) rear **DVI connector**, which port is provided to feed high resolution projection and display devices.

This makes it possible to supply this output chain with a mixture of lower resolution video signals *and* a higher resolution computer display, without degrading the latter. TriCaster can pass any supported screen resolution from XGA (1024x768) up to Super Quad XGA (2560x2048).

Hint: ESC is the hotkey for VGA Take; Shift-ESC performs VGA Fade.

When a monitor or projector is not detected on TriCaster's secondary DVI connector, the relevant sections of TriCaster's control panels will be ghosted (unavailable). You must connect a second output, and then re-start the system. Once it has re-started, these controls will be activated.

6.9.5 OUTPUT TO VGA

The right half of the **External** panel is taken up by the **Output to VGA** pane, which has three sections of its own.

Note: A LiveText™ source is available – when activated as an External Source – to the Switcher and Overlay sections, but cannot be used for the Output to VGA source.

RESOLUTION

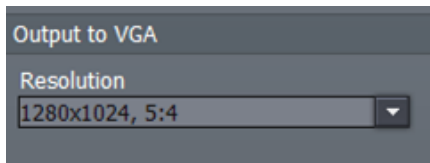


Figure 93

Uppermost is the **Resolution** menu, which permits you to set a resolution appropriate to your connected high resolution display device. Ideally, use the largest size supported by your external display device.

6.9.6 VGA KEYING

Beneath this is the **Keying** section. This is a simplified version of the main keyer discussed earlier. Computer displays are normally composed of substantially less complex color combinations than video, making them an easy candidate for keying.

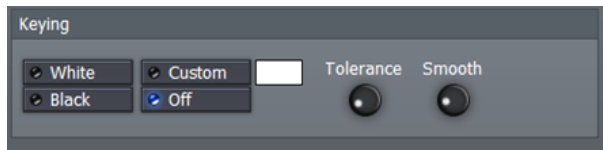


Figure 94

The **Custom** option, when enabled, is essentially a chromakeyer. It provides the same basic color well as the latter. Right-click in the color selector, and – holding down the right mouse button – drag the eyedropper to the monitor. Release it above the color you wish to make transparent.

The **Black and White** buttons are simple lumakeyer alternatives – click the appropriate choice to make either black or white areas transparent. For example, to display song lyrics, you might wish to key white text over another video source.

Hint: A high resolution iVGA source keyed in this fashion can provide sharper text on display devices connected to the DVI port than lower resolution overlays fed through the Switcher or primary Overlay.

Whichever keying option you select, **Tolerance** determines the range of luminance or color to include as transparent. A low tolerance removes values close to the one chosen, while increased tolerance includes a broader range. The Smooth setting helps to remove sharp, pixelated edges in the key.

6.9.7 POSITIONING

Towards the lower right section of the **External** tab is the **Positioning** panel. Located here are several additional controls to perfect your high resolution DVI output. *Keep in mind that the controls in this section affect everything displayed on the DVI port – not just iVGA sources.*

First are controls to properly center the display. **X Pos** adjusts the screen's horizontal position, with negative values shifting the image left, and positive values shifting the image to the right. As you would expect, **Y Pos** controls the screen's vertical centering.



Figure 95

Crop Top, Bottom, Left and Right trim the screen edges. The values are expressed in pixels.

Hint: Crop can be very useful to eliminate rough edges from standard video source. These are not normally seen on a television, where they appear behind the screen's bezel – but they are often readily apparent when the video is projected.

There is also a simple **Proc Amp** section to help you optimize the output display. The **Brightness** and **Contrast** knobs are self-explanatory, while **Video Enhance** can be thought of as a “sharpness” control.

6.10 RECORD AND STREAM

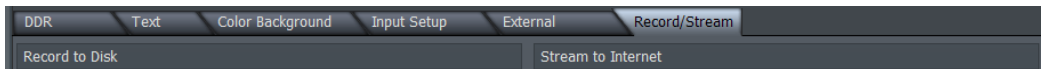


Figure 96

TriCaster offers producers the ability to send live output to hard disk for archiving and later editing, or send it out as a live Internet stream (using either Microsoft Windows Media™ or Adobe Flash® encoding.) The settings and controls for these operations are grouped in the **Record/Stream** panel, accessed by clicking the main tab with that label.

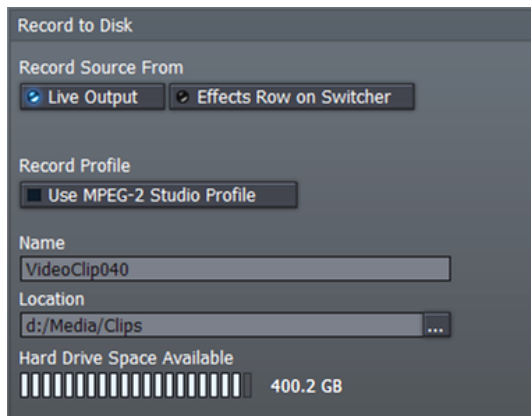
You can even record video to disk and stream at the same time. (The captured file can also be uploaded to your streaming provider for on-demand streaming *after* the event.) Further, your live output can always be recorded externally by a video deck or DVD recorder at any time.

See Chapter B, Streaming, Networking and the Internet for more detail on streaming.

6.10.1 RECORD OPTIONS

To capture the output from a live switching session for later post-production or distribution, use **the Record to Disk** section, which forms the left-hand section of the **Record/Stream** tab.

Enter a filename in the **Name** field (Figure 97), and choose where to save the video clip using the **Location** section of the panel.



Click the **Browse [...]** button beside **Location** to open a folder selector, and choose a convenient target volume for recorded files, whether on TriCaster’s D: drive, or a suitable external hard drive (see an *important note* in Section 7.4.1 regarding storage media file systems).

Figure 97

The **Record Source From** buttons permits you to record either the main **Live Output** or **Effects Row** output stream.

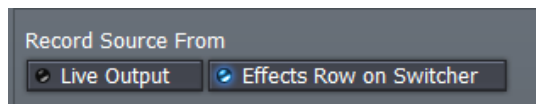


Figure 98

Choosing **Live Output** captures your main program, including cameras, clips played back from **DDRs**, **LiveSet** effects, **External** sources, and Overlays. Selecting **Effects** causes that row’s output only to be recorded.



Click the **Record Output** button (at far left, Figure 99) to capture the selected video stream to your hard drive.

Figure 99

Hint: When active, the Record button light is red for Live Output, and blue for Effects.

A hard drive capacity monitor shows your remaining storage space, and a counter below the **Record Output** button keeps track of the length of your current recording.

RECORD PROFILE

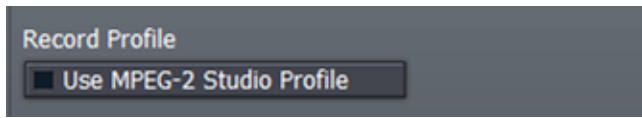


Figure 100

Various encoder attributes for file recording purposes are governed by the **Record Profile**. The Record Profile switch appears in the **Record/Stream** tab (Figure 100) of the **Live Production** screen.

By default, TriCaster capture uses the **Regular Profile**. This setting records a high quality platform agnostic MPEG-2 encoded file. The Regular Profile is an excellent choice for general purpose use, producing quality equivalent to or better than the ubiquitous 'DV' file format in most situations.

TriCaster's **Regular Profile** MPEG-2 files are widely compatible with other video software. Later editions of Windows® and OS X® provide native MPEG-2 support, and a suitable codec is also often installed by third-party DVD viewing and authoring software.

Systems running older versions of Windows™ may lack an appropriate codec, but in such cases, scouting around on the Internet is likely to turn up a (free or inexpensive) MPEG-2 one (just search for something like "Windows play mpeg-2"). Even so, a specific program may lack compatible MPEG-2 file support. At the time of writing, a few applications may require the use of third party file conversion utilities.

The **Regular Profile** is supplemented by a very high quality alternative called the **Studio Profile**. Enabling the switch labelled **Use MPEG-2 Studio Profile** under Record Profile elevates TriCaster's encoding quality:

- Regular Profile –double bit-rate MPEG-2 (I-frame) encoding
- Studio Profile – new double bit-rate 4:2:2 MPEG-2 (I-frame) encoding

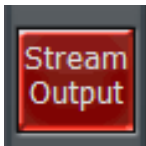
The **Studio Profile** produces higher quality than all previous TriCaster recording formats (including SpeedHQ™). The resulting files fulfil the requirements for "High Profile" MPEG-2 encoding established by the Moving Pictures Expert Group (MPEG).

Hint: please see <http://en.wikipedia.org/wiki/Mpeg2> for more detailed information on High Profile MPEG-2 encoding.

The 4:2:2 sampling and high fidelity invoked by the **Studio Profile** make it especially well-suited to critical chroma-key applications. These files retain more color information than *either* Regular Profile or standard DV files. Support for High Profile MPEG-2 files by various applications, while widespread, is not universal, however. Thus it would be prudent to test file compatibility with your favourite third-party programs before making extensive use of the Studio Profile.

6.10.2 LIVE STREAMING

When you need to stream your TriCaster output to the Internet, NewTek has made this process as simple as possible. In addition to the standard Windows Media Streaming Profiles, TriCaster allows you to stream using Windows Media 11 and VC1 presets, as well as Flash™ (including H.264).



The **Stream to Internet** panel is neighbor to Record to Disk in the **Record/Stream** panel. At the simplest level, with TriCaster connected to the Internet, all you really need to do (to establish an outgoing a/v stream) is click the **Stream Output** button.

Figure 101

Enabling TriCaster's outbound stream immediately provides you with the IP (Internet Protocol) address of your computer on the network. This information will be provided as 'punctuated' numeric value in the **Location** display field (Figure 102).

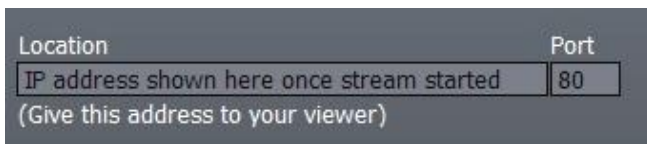


Figure 102

You can provide any clients or streaming providers with this mms: (Microsoft Media Server) address. Entering it into the **Open URL** dialog of **Windows Media Player** (opened from the **File** menu) on client systems connected to the Internet directs **WMP** to show the TriCaster stream.



Figure 103

The **Stream Type** drop-down menu allows you to select various image sizes and bandwidth rates for your Internet broadcast (and also provides other important option, including (Push or Pull) Windows media or Flash streaming.)

The default **Stream Type** is a single Windows Media stream at one-half standard video resolution (360x240 pixels), but you can modify this to suit your need and the capabilities of your Internet connection (and that of your remote viewers).

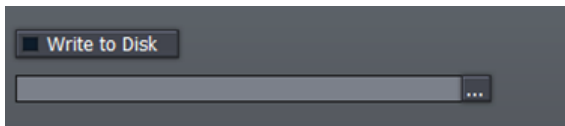


Figure 104

The **Write to Disk** option allows you to archive the live *stream* as a file. Click the **Browse [...]** button to choose where you wish TriCaster to save the resulting file.

Note: If the Write to Disk option is chosen, it's important to remember to turn off the Stream Output button when the presentation concludes, or TriCaster will continue writing this file.

6.11 AUDIO MIXER

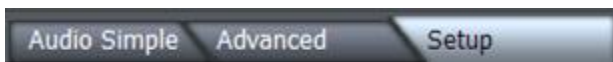


Figure 105

TriCaster provides audio reinforcement and refinement of your Live Production presentation by means of its integral audio mixer. The mixer features three tabbed panels, providing volume control and equalization for the external inputs and the stereo channels of internal DDRs, as well as source configuration options.

6.11.1 BASIC AUDIO CONTROLS

We'll consider the Audio Mixer tabs separately. However, first let's look at some common features, then go on to discuss their unique aspects.

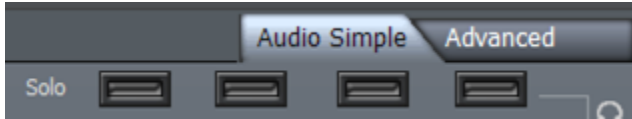


Figure 106

The top row (just below the tabs) for both the **Audio Simple** and **Advanced** tabs is similar for all models (although the number and type of audio sources shown varies.)

SOLO

The top row (just below the tabs) for both the **Audio Simple** and **Advanced** tabs is similar. Here we find the **Solo** buttons for **Mic** and **Line** inputs as well as the **DDR**.

When enabled, Solo buttons illuminate in green, and cut audio from all other (non-soloed) inputs on the **Headphone** output. This means that when Solo is enabled for one or more audio sources, *only* the audio from soloed channels is sent to Headphones.

Two applications of Solo are of particular interest:

- To preview an audio source on **Headphone** output (without allowing the audience to hear it), enable both **Mute** and Solo for the channel. Enabling **Solo** does not remove the respective channel from the master **Audio Out** stream. Muting the soloed channel silences it on Audio Out, without affecting Headphone output.
- Conveniently, **Solo** allows you to create an ersatz 'mix-minus' audio output. This is useful when you need a secondary output to supply only specified audio sources. For example, for a remote interview by telephone or Internet hookup, you may wish to send the remote person program audio mix *minus* his or her own voice, avoiding annoying feedback or echo.

TALK OVER, GAIN AND MUTE

The lower halves of the **Audio Simple** and **Advanced** tabs are also identical. The uppermost row of buttons in this pane is labeled **Talk Over**. This feature, available for all main input channels, allows a presenter to instantly give audio priority to one or both of the incoming microphones. Instead of muting the sound, enabling Talk Over reduces the levels of other channels by 6 dB.

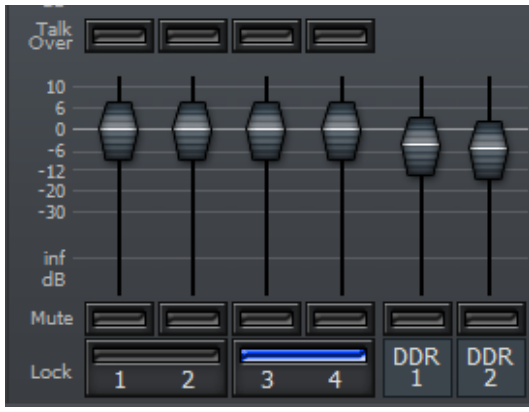


Figure 107

The largest part of this section is the area devoted to individual volume sliders. Drag up or down to adjust levels, just as you would when using a physical audio mixer.

The **Lock** buttons at the bottom illuminate in blue when enabled, and lock two sliders together. This is convenient when you are using the mono input channels as stereo pairs.

Mute buttons are supplied for each source channel, as well. These turn red when enabled, warning you that the channel is temporarily disabled.

6.11.2 MASTER CONTROL

Finally, among features shared by all three audio tabs, note the long vertical column at the right that controls master output and headphone levels.

The red volume knob below the two-channel VU meter display is the master output volume. This control governs the output level for all channels.

The volume knob above provides separate control for TriCaster's headphone output, permitting the operator to comfortably monitor **Live Output** (or the Solo mix) via the headphone connection on TriCaster's front panel.



Figure 108

6.11.3 AUDIO SIMPLE

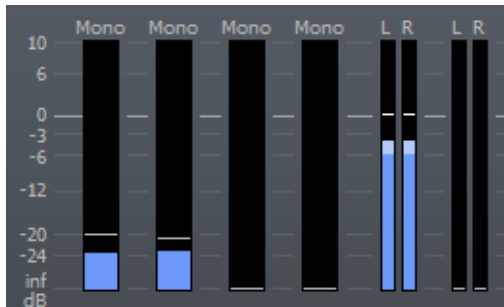


Figure 109

The only section of the audio simple tab we haven't touched on already is the **VU meter** panel, shown here.

Large VU meters display the audio level for mono inputs, while thinner stereo pairs are provided for Line and DDR(s).

Optimal audio levels are in the -6 to 0dB range. These levels are indicated by a light blue bar in the VU meter. Higher levels are shown as light orange or red. If you notice audio going above 0, clipping is occurring. You should reduce that source's volume using the slider beneath.

6.11.4 ADVANCED

The **Advanced** tab reveals a three-band equalizer, along with **Pan** and **Balance** controls.

Drag your cursor left or right above the **High**, **Mid** and **Low** knobs to increase or decrease the level for that part of the audio spectrum for a specific channel.

Pan and Balance seem similar, but actually have different effects.



Figure 110

Pan controls the amount of sound from the designated channel that is sent to the **Left** or **Right** output channels. When centered, sound from a given channel is evenly split on both Left and Right outputs. Turning the control clock-wise adds more of the sound to the right output. When

Pan is turned all the way to the right, the sound from the channel is sent exclusively to the right channel.

Balance, however, simply modulates the level of left or right channel output, raising or lowering it. Unlike **Pan**, Balance does not *move* sound from a source channel left or right.

Hint: As usual, double-clicking a knob returns it to its default setting. Also, bear in mind that adjusting the relative level of part of the audio spectrum using the EQ controls affects the overall level for that channel, which may in turn call for compensating adjustments of the main slider.

6.11.5 AUDIO SETUP

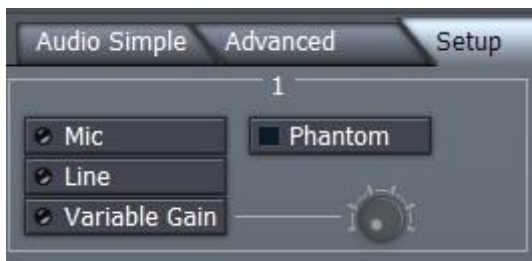


Figure 111

The final audio tab is **Setup** (Figure 111). This pane provides **Mic** or **Line** level selection, for inputs permitting you to accommodate low-impedance microphones and high impedance (line level) inputs.

When enabled, the **Phantom** button sends power to microphones requiring it. As widely varied levels can be encountered in dealing with audio equipment, a **Variable Gain** switch is also provided. Turning the nearby **Trim** knob clockwise allows you to accommodate most common audio sources.

6.12 CONFIGURE PANEL (BROADCAST)



Figure 112

The TriCaster BROADCAST model features an additional configuration panel not found on the other models. This **Configure** panel provides control over some advanced preference settings.

To open this panel, click the **Configure** button at upper right in the **LIVE Production** desktop titlebar, beside the time display – see Figure 112.

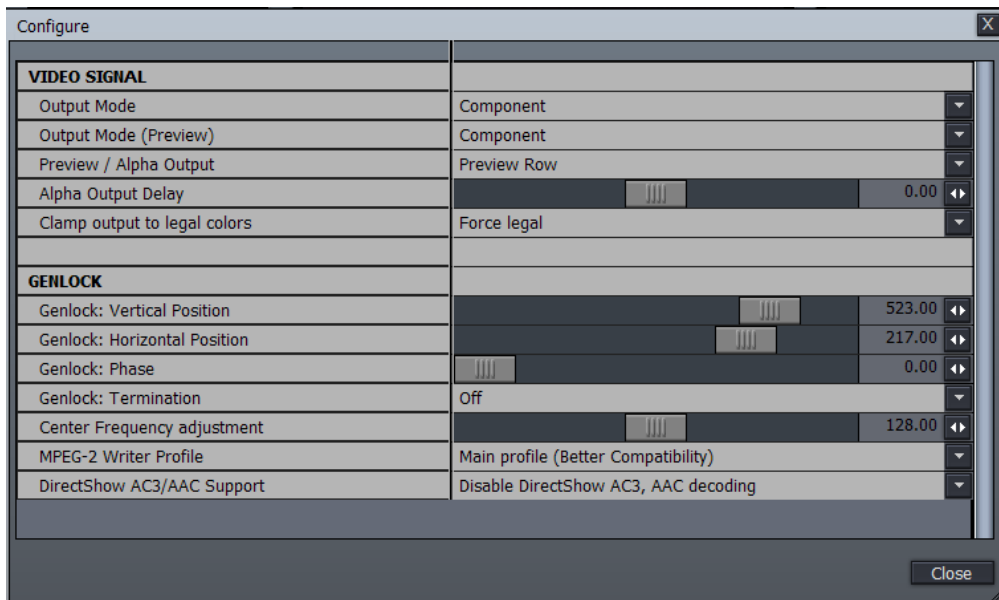


Figure 113

Optional settings are grouped in two main categories – **Video Signal** and **Genlock**. The panel lists various optional settings in a column at left. For each item listed, a corresponding menu option or numeric slider is provided in the right-hand column.

6.12.1 VIDEO SIGNAL

OUTPUT MODE

Choose **Component** or **Y/C** for the primary output connection type.

OUTPUT MODE (PREVIEW)

TriCaster BROADCAST supplies an alternate configurable output in addition to Program output. Use this to assign the connection type for the secondary output, again selecting between **Component** or **Y/C**.

PREVIEW / ALPHA OUTPUT

This control allows you to designate what video stream is sent to the alternate video output. Your output signal options are:

- Disabled
- Preview Row
- Effects Row
- Alpha from Main
- Alpha from DSK (Overlay)
- Alpha from Main+DSK (Overlay)

ALPHA OUTPUT DELAY

Use this control to adjust alpha output timing when necessary to ensure the alpha and color output streams are synchronized.

CLAMP OUTPUT TO LEGAL COLORS

TriCaster is capable of retaining and working with colors that fall outside of the normal luminance range (0 – 100 IRE), and similar ‘extra-legal’ Chroma ranges. Although this can be useful in the right hands, out-of-range chroma can exhibit problems on output to certain displays (especially visible in Y/C and composite video.)

Hint: Component video is not subject to this effect, and you should be able to access the full gamut of possible colors. The extra information is still useful and can be used in editing and color correction for a number of very useful things

TriCaster provides waveform monitor and vectorscope modules to help you detect illegal video colors passing through the system. Signal levels for each input may be adjusted to acceptable tolerances using the **Proc Amp** controls in the **Input Setup** panel.

Still, you may prefer to simply enable clamping instead (although the impact of clamping on the video signal may be discernible to a very discriminating eye.)

6.12.2 GENLOCK

The word **Genlock** is an abbreviation for “generator locking device”. Such devices serve to synchronize the signals from two or more video devices.

The genlock accepts a reference signal (house sync) – such as a black burst signal – and locks other devices to the same frequency as the reference signal.

DISCUSSION

Miniscule local timing differences between devices may cause tiny but significant delays during switching operations, which in turn contributes to throughput latency. Thus, serving i) TriCaster’s Genlock input and ii) other video devices in the chain all with the same reference signal is the best approach.

You could think of it this way:

- Genlocking your *cameras* has the effect of locking their output together, ensuring optimal synchronization for live switching. This may result in throughput latency benefits.
- Supplying the same sync source to TriCaster’s **Genlock** input ensures a match between TriCaster output and any downstream video devices required to handle both it *and* other (genlocked) sources.

Ideally both your cameras and TriCaster should be genlocked. If sources are not genlocked to the same reference signal as the TriCaster output, a TBC (Time Base Correction) operation is automatically applied. Time Base Correction may drop or insert frames as necessary to maintain synch, hence it is a less desirable approach.

Note: It is not absolutely required that you genlock TriCaster video sources, as internal sync is provided. However, doing can sometimes shave roughly one frame off transmission latency.

Also, digital audio is less forgiving in certain respects. To avoid audio glitches when mixing digital audio you must ensure that the timing for all digital audio sources is synchronized. This means doing one of the following: i) genlock all digital audio sources and TriCaster to a house reference signal, or ii) genlock the cameras to TriCaster's output.

GENLOCK SETTINGS

Genlock controls are provided for **Vertical Position**, **Horizontal Position**, **Phase**, **Termination** and **Center Frequency**.

VERTICAL POSITION, HORIZONTAL POSITION AND PHASE

Locking all devices to house sync is important, but this alone does not actually ensure a perfect downstream match.

Consider an army marching along: each step the soldiers take occurs at precisely the same moment, so we could say their timing is synchronized. Even so, problems result if one soldier leads with the left foot while everyone else is on the right. Or perhaps everyone is evenly spaced and perfectly aligned but for one misfit who 'tailgates' the soldier ahead of him and keeps stepping on his heels.

This is essentially why TriCaster provides several adjustments in its **Genlock** section. The **Horizontal** and **Vertical Position** settings pin the image in the proper space in the frame, and in doing so could be likened to making sure each marching soldier is in position relative to his fellows (as viewed from above). The **Phase** setting ensures proper color alignment, corresponding to making sure everyone is on the left or right foot at the same time.

Thus, the **Vert Position**, **Horiz Position** and **Phase** settings allow you to tweak synchronization to arrive at an optimum match between devices. Typically, these settings are fine tuned with the aid of a downstream Vectorscope and Waveform Monitor.

(A discussion of these adjustments goes beyond the scope of this manual, but a quick online search for the keywords “genlock” and “adjust” turns up a number of excellent references).

CENTER FREQUENCY

This setting is applied when a Genlock reference signal is not in use. To adjust the setting, supply color bars to an input and pass TriCaster’s video output to a downstream vectorscope. The vectorscope display is completely stable when **Center Frequency** is properly adjusted.

Downstream **Waveform** and **Vector Scopes** are helpful for adjust TriCaster’s **Horizontal** and **Vertical Position** and **Phase** settings in the **Genlock** section of the **I/O Configuration** panel.

GENLOCK TERMINATION

In a situation where you intend to loop a house sync signal *through* the TriCaster BROADCAST to other devices, **Termination** should be turned off.

6.12.3 DIRECTSHOW AC3/AAC SUPPORT

Windows™ does not natively support AC3 or AAC audio. If you install a suitable codec you can enable support for reading AC3 or AAC audio in **Edit Media** using this option. (Note that some third-party codecs can cause crashing or other conflicts with TriCaster, which accounts for the default disabled state.)

7 CAPTURE MEDIA



TriCaster allows you to capture video from live cameras, or other sources such as a VCR or DVD player.

Captured files can be used in either live production or as part of an edited video project. This chapter examines TriCaster's Capture Media tools and options.

The **Preview Monitor** consumes the left upper half of the **Capture Media** screen. There are three other main regions on this workspace: **DV Camera** control and **Capture Details** fill the rest of the upper half of the screen, and the **Captured Files** bin consumes the entire lower half.



Figure 114

7.1 CAPTURE DETAILS

The **Capture Details** panel allows you to select which input source to record. You can choose any of the source types available on your TriCaster model.

Input Type	TriCaster STUDIO	TriCaster BROADCAST
DV	√	√
Composite	√	√
Y/C (S-Video)	√	
Y/C (BNC)	√	√
Component	√	√
SDI (Analog Audio)		√
SDI (AES Audio)		√
SDI (Embedded Audio)		√

Generally, for Capture purposes sources must be connected to Input 1 for a given input type.

Audio Input types likewise vary by TriCaster model. For recording narration or voice-overs (audio only), select **Mic 1 (Voice)** to record a .wav file directly to disk from first microphone input.



Figure 115

7.1.1 STREAMS TO CAPTURE

When video sources are selected, you can choose to capture audio, video or both, using the switches provided in the **Streams to Capture** section.

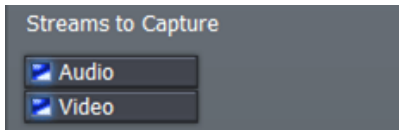


Figure 116

Selecting an **Audio Only** source such as **Mic 1 (Voice)** or **SDI 1 AES** as the capture source automatically deselects the **Video** stream switch.

7.1.2 RECORD PROFILE

Various encoder attributes for file recording purposes are governed by the **Record Profile**. By default, TriCaster uses the **Regular Profile**, an excellent choice for general purpose use.

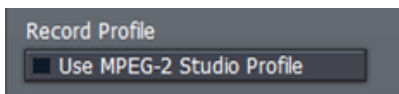


Figure 117

Enabling the switch labelled **Use MPEG-2 Studio Profile** instructs TriCaster to employ extended encoding quality (see Section 0 for more details to help you decide if this option is for you).

7.1.3 NAME

The **Name** field allows you to type in a base name for your captured files. TriCaster will automatically increment all subsequent captured filenames numerically. (So, if you use the filename “MyCapture”, the clips you capture subsequently will be named “MyCapture001”, “MyCapture002”, etc.)

Finally, the **Capture Details** pane shows a gauge to inform you how much free space remains on your TriCaster.

7.2 DV CAMERA CONTROL

DV Camera Control allows you to connect a standard definition Digital Video (DV) camera or deck to TriCaster using your choice of the 4 pin or 6-pin connections provided, and a suitable cable.



When a DV source is detected, the status indicator updates to read **DV Device CONNECTED**, and the transport controls become active, allowing you to rewind, stop, pause, play or fast forward the tape.

The time-code display indicates your position on the tape. Time values are displayed in the format Hours:Minutes:Seconds.Frames.

Figure 118

The horizontal **Jog/Shuttle wheel** is activated by dragging left or right with the mouse, in a manner similar to other knobs in TriCaster STUDIO. Select either the **Jog** or **Shuttle** switch to determine the mode of operation for the wheel.

Note: Analog sources and SDI do not provide similar machine transport controls

7.3 CAPTURE CONTROL

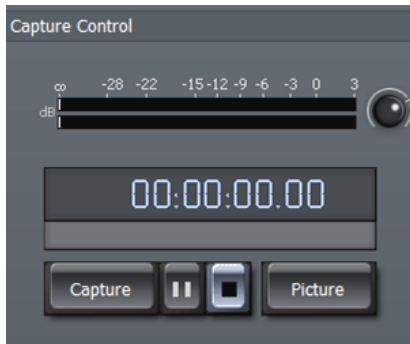


Figure 119

After locating the footage you'd like to capture, press **Play** and then **Capture**. The time-code begins running to indicate clip duration.

When you click **Stop**, the time window resets, and the clip is deposited in the **Captured Files** bin.

Click **Picture** to grab a single image from the video source (as a JPEG file).

7.4 CAPTURED FILES

The **Captured Files** bin is where each clip is deposited as you capture. You can allow TriCaster to capture to the default folder, D:\Media\Clips, or you can create your own folder. Along the bottom of the Media bin is the **Hotlist** of frequently accessed folders.

To remove any folder from the scrollable list, select it and press the minus sign to the left. To add a folder to the Hotlist, navigate to that folder, and then press the plus sign. If you wish to rename any Hotlist entry, right click on the button and choose **Rename** tab.



Figure 120

Note: More detailed information on the Media Bin and its many great options and features is found in Section 8.1.2, The Media Bin.

7.4.1 IMPORTING FILES AND ARCHIVING DATA

TriCaster allows you to flexibly import compatible files via network connection, USB (or FireWire) external drive connections or using flash (a.k.a., “thumb”) drives.

Important Note: external media devices are often pre-formatted using Microsoft’s FAT file system because of its broad compatibility (for example, an Apple™ computer running OS X has no problem with FAT-formatted external drives). Unfortunately, FAT imposes a strict maximum file size of four gigabytes. Video files can often exceed that limit, resulting in various error messages.

The newer NTFS file system removes this limitation, and is recommended for external media you intend to use for transferring large files. Generally, you can reformat external media to NTFS using a Windows 2000, XP or Vista system.

NTFS doesn’t solve all cross-platform issues, however. At the time of writing, OS X™ versions offer read-only NTFS support. Some third-party solutions purport to provide full NTFS support under OS X, but for the greatest convenience you may find it convenient to avoid the whole issue by transferring large files using a network connection.

There are USB and FireWire connections on the TriCaster faceplate and rear panel. Connecting an external USB key-drive or hard drive causes that device to appear in any TriCaster **Media Bin** as a new hard drive. This means you can not only import images and clips for editing or use in the Overlay section or a DDR, but you may also copy your recorded presentations or edited videos quickly to a transportable drive for archiving or other purposes.

Hint: Highest transfer speeds can be obtained with USB 2.0 external devices

8 EDIT MEDIA



TriCaster includes one of the fastest non-linear video editors available. Editing can be performed in both **Timeline** and **Storyboard** mode, to suit your specific needs.

This chapter explains the flexibility and power available for creating compelling, professional videos.

TriCaster's **Edit Media** comes packed with advanced features, such as multiple layers, real-time slow motion, picture-in-picture effects, and transitions – even color correction. In addition, the **Tool Shed** utility automates frequently used features, and also allows you to store your own custom effects and effortlessly recall them with one click.

8.1 TWO EDITORS IN ONE!

When you edit in TriCaster, remember -- you can go back and forth between **Storyboard** and **Timeline** views any time you wish.

Whichever you choose, you are simply selecting a different view of the same project. Some operations (such as multi-layer compositions) are easier to manage in the **Timeline**, while for quick assembly of a project, trimming and re-ordering clips, it's very hard to beat the **Storyboard**.

8.1.1 THE MONITOR

The **Edit Media** panel has several sections. The upper left quadrant hosts the **Monitor**, which always depicts the full composition of your edit project at the current point in time (marked by the **Edit Line** in the Timeline or Storyboard view.)

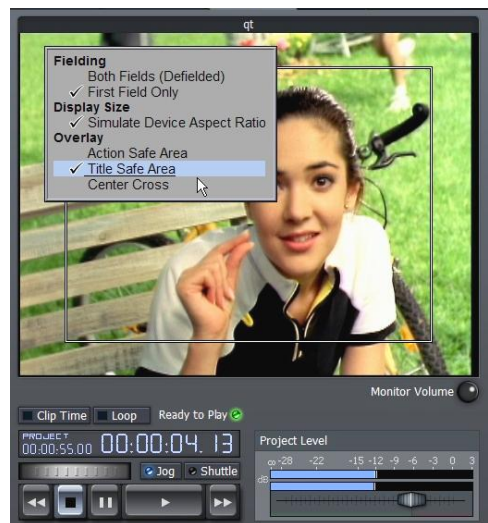


Figure 121

Beneath the monitor are the familiar playback controls, including a **Jog/Shuttle** wheel. Just above these, note the **Loop** switch. This forces your entire project to play again after it has played to the end. The nearby **Clip Time** toggle switch alternately changes the timecode display to show project time during playback and ‘scrubbing’, or local ‘clip time’.

Hint: Clicking the mouse directly on the timecode displays also has an effect. You can switch between countdown and count-up modes this way.

The **Monitor Volume** knob controls the audio output level for playback through TriCaster’s analog audio outputs, whereas the **Project Level** slider underneath the VU meters allows you to introduce a global audio level offset when useful for output to rendered files or using **Export to Tape**.

Right-click the monitor to reveal a menu with numerous preference settings affecting the monitor display, discussed next.

BACKGROUND COLOR

Select between **Grey**, **Black** or **White** to be used to fill blank areas outside of the image display in the Output Window.

FIELDING

Generally, video projects flicker on computer monitors because of interlacing. The fielding options permit you to determine how you wish to deal with this matter. You may choose to show both fields with de-interlacing applied **Both Fields (Defielded)**, or **First Field Only**.

DISPLAY SIZE

Unlike HD video (or computer displays), standard definition video pixels are rectangular, not square. When **Simulate Device Aspect Ratio** is disabled, every pixel in your imagery is displayed on the computer monitor ‘as-is’, without adjusting the display to show image proportions correctly. With this option enabled, the display is scaled to produce a properly proportioned image, just as it will appear on a television set.

Note: Simulate Device Aspect is a preview option, only – it has no effect on the actual output of the project or rendered files.

OVERLAY

Typical television displays crop the video image a bit. When enabled, the **Action Safe Area** and **Title Safe Area** options place rectangular overlays on the monitor. These can help you visualize where important features of your production will appear onscreen, taking this into account. The **Center Cross** setting subdivides your image into quadrants to assist with composition.

Hint: clicking the right mouse button often reveals different menus based on context. Many powerful features and settings are easily accessible with the right mouse button.

8.1.2 THE MEDIA BIN



Figure 122

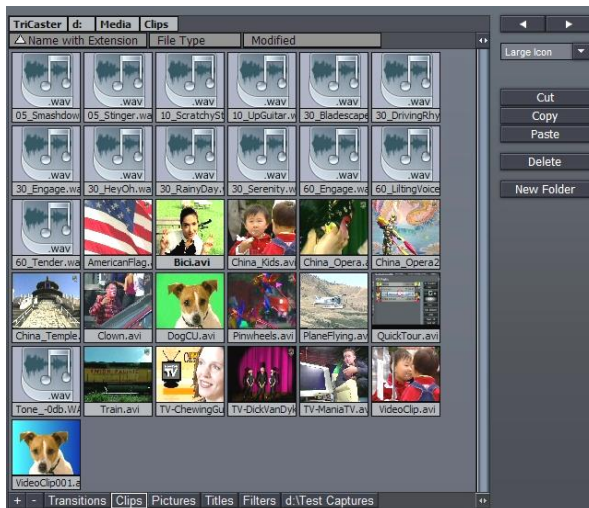


Figure 123

Three tabs at the top of the screen govern what appears in the large section to the right of the **Monitor**. By default the **Media Bin** is shown. (We'll discuss the features of the important **Controls** and **Tool Shed** panels a bit later on.)

The **Media Bin** is where you locate all your audio, video, graphics and titles.

You can its asset management tools to organize your folders and files, and personalize the view of these assets. In the default view you will see a thumbnail image icon for video files.

At the top of the **Media Bin**, rectangular list boxes show the various levels down to the current folder you are viewing. Click directly on a box to jump back to that location.

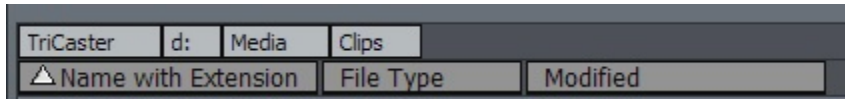


Figure 124

Roll your mouse over a thumbnail icon, and it begins to play the video scene in miniature. As well, a small running timecode panel shows the current location in the clip, and its duration. Video projects often involve many similar clips. This animated preview is a great help in distinguishing one clip from another.

Hint: Sometimes, a longer clip may best be distinguished from a similar one by viewing a bit near the end. To reverse the direction of the preview, hold down the Alt key. You can also engage Fast Forward and Fast Reverse, by adding the Shift key to the operation (The Shift key causes playback at 10X the normal rate.)

VIEW OPTIONS

The **Media Bin** drop down menu in the upper right corner controls the appearance of items in the Bin. By default this menu is set to Large Icon. You can use this menu to radically alter the Filebin's appearance and features.

Try the different view options out, and you'll quickly see how they affect the display. The right/left arrow buttons above this menu are Forward and Backward buttons for the Media Bin window.

The only view option that requires a little longer explanation is the **Details** view (**Details Only** is similar, but omits the file icon).

Details view gives you a lot of in-depth information about your files, as follows.

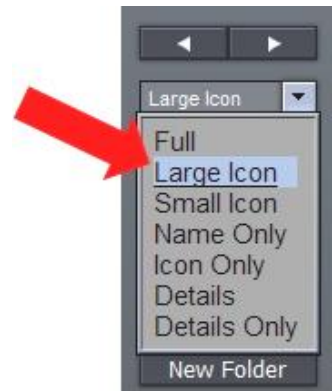


Figure 125

TriCaster	d:	Media	Clips
△ Name with Extension	File Type	Modified	
AmericanFlag.avi	avi	4/7/2005 11:56 AM	
Bici.avi	avi	4/7/2005 11:56 AM	
China_Kids.avi	avi	4/7/2005 11:57 AM	
China_Opera.avi	avi	4/7/2005 11:57 AM	
China_Opera2.avi	avi	4/7/2005 11:57 AM	

Figure 126

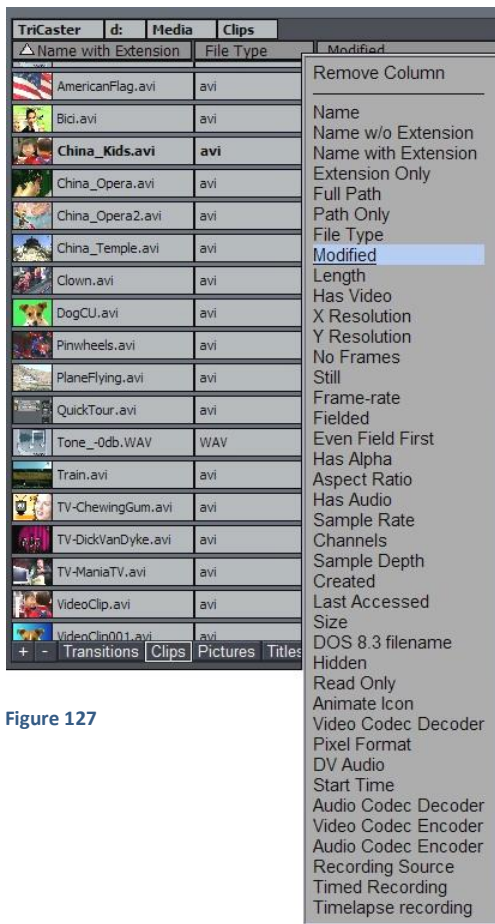


Figure 127

The *column labels* at the top of the Details view do more than just identify the column. Clicking a column label toggles the file sorting order based on entries in that column. Also, column labels can be dragged left or right then released to rearrange the order. Drag the dividing line between two columns left or right to change the width of the column.

Also, the column labels have a unique context menu of their own. Right-click on a column label (or in the empty space to the right of a column) to open this menu:

In addition to **Remove Column**, you can select from a long list of file attributes that may identify or distinguish various file types. Select one of these entries to modify the current column contents or add a new column.

In addition to helping with the occasional ‘spring cleaning’ of your storage system, Details view can greatly assist you to differentiate and organize elements of your project, and quickly drop large groups of files into a **Storyboard** or **Timeline** pane.

Hint: In all view modes, if you click one file, and then hold Shift down when you click another, you can select all the files in between.

Or, click multiple files while holding down the Ctrl key to select many files – when you drag them into the **Storyboard** or **Timeline**, they will be added sequentially in the order you clicked them.

Hint: The labels of files that are already in use in the current project are displayed in bold text.

THE HOTLIST

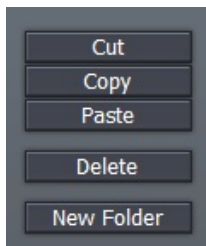
If you have a folder you frequently access, you can add it to the **Hotlist** at the bottom of the **Media Bin** pane. Navigate to the folder you want to add, and press the '+' sign in the lower left corner of Media bin.



Figure 128

When you right-click a **Hotlist** button, a two-item context menu pops up. You can **Remove** the selected entry or **Rename** it. The Rename option creates a 'nickname' (or alias) for the current folder, and refreshes the Hotlist to display it. (If your list is wider than the bin, there is a scroll gadget lower right.)

CUT, COPY, PASTE



Beneath the View options menu are **Cut**, **Copy**, **Paste** and **Delete** buttons. These operate on the currently selected items in the Media Bin window.

Of course, the common keystroke shortcuts also work in the usual manner (Ctrl + c for Copy, Ctrl + v for Paste, Ctrl + x for Cut, and the DEL key to Delete a file.)

Figure 129

Note: You can also create a New Folder by selecting that entry from the menu that appears when you right-click in an empty spot in the Bin window.

8.2 THE EDITOR – OVERVIEW

The Edit pane takes up the entire lower section of the **Edit Media** screen. This editor is flexible, fast and friendly. It is also forgiving -- whether you choose to work in the **Storyboard** or **Timeline** views, you can undo edit operations with Ctrl-z, all the way back to the beginning of the project.

(When you **Save Project**, you are even offered the opportunity to save your **Undo Stack** to disk, so the next time you load your project you can undo from the last session.)

8.2.1 CONTROL PANEL

A column at right holds clip and project control functions. The **Timeline Ripple** switch is located at the top of the column. When rippling is enabled, changing the **In** or **Out** point of a clip causes all subsequent clips to ripple by the same amount.

For example, if you decrease the length of the clip by two seconds when ripple is enabled, all the clips after it on the **Timeline** also adjust to new positions two seconds earlier. **Ripple** doesn't affect the duration of the affected clips, just where they occur on the Timeline. (The Storyboard is always in Ripple mode.)

EDIT MENU

The **Overlay** button activates transparency around clip edges (and enables the alpha channel in files formats that support it) so it can be layered, or scaled down as a picture-in-picture. (The 'y' key is a shortcut to toggle Overlay on and off for a selected clip.)

Cut, Copy and Paste are self-explanatory (standard keystroke shortcuts work, too).



Figure 130

Remove takes a clip out of the project, but does not delete it from the hard drive.

PROJECT MENU

You can save and re-load your TriCaster video projects using the buttons in the **Project** section of this right-hand column, as well as starting a fresh piece using **New Project**.

FILE I/O

Import From Tape - This button requires an active IEEE1394 connection to import video footage from an external DV or HDV device. Import from Tape pops up a window with controls similar to the one in the main **Capture Media** panel. In addition to transport controls for the external DV device, however, you will see three 'new' buttons:



Auto Chop will cause your captured file(s) to be automatically severed and a new file started at 'scene breaks' – wherever the camera was stopped and started. This is a great timesaver!

Use the **Chop** button to break off Capture to the current file, and immediately commence recording another. (Repeated use of Chop can quickly populate your project with ready-to-trim content!)

Figure 131

Note: A couple of frames may be lost between scenes when you use Chop. While generally they will not be missed, using Chop means sacrificing the possibility of re-joining the resulting clips in your project for seamless playback.

The **Reset** button actually drops the current clip being recorded, and restarts capture from the current point in the source material.

Note: Even though TriCaster is a standard definition video device (and edit projects are always SD, you can capture HDV files using Import from Tape.

Export to Tape - This feature uses the IEEE 1394 Preview to send the current project to a DV device (As noted elsewhere in this manual, HDV files can be captured by TriCaster. Ultimately, however, the **Edit Media** section output is standard definition – hence HDV export is *not* supported.)

Deck controls are provided in the panel that pops up to assist you in locating the desired point on the tape. You do not need to engage tape play beforehand; recording is begun immediately on clicking the Go button. During recording to tape, the interface is locked (apart from the Cancel button.)

Note: Particularly intensive sections of edit projects may stutter during playback (e.g., segments with many overlays, such titles or picture-in-picture compositions).

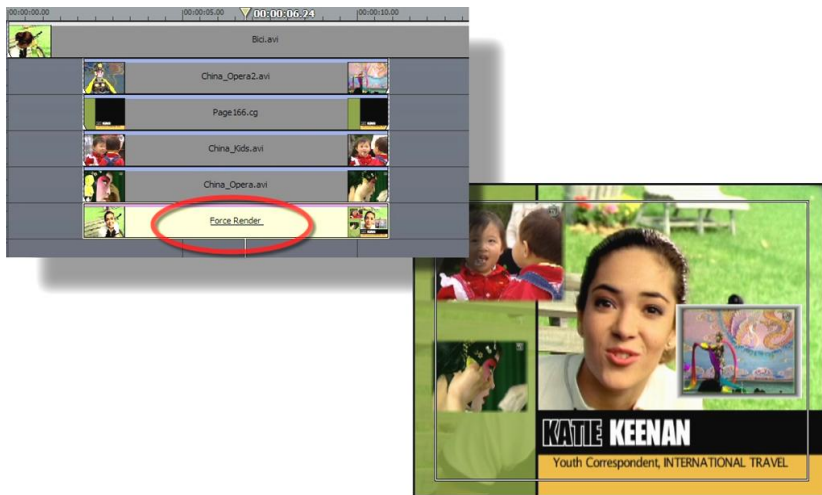


Figure 132

When necessary, you can avoid problems during Export to Tape (or any other time) by dragging the **Force Render** filter from the **Filters** folder onto the Timeline. Position this effect at the bottom of the recalcitrant project segment, and stretch it to last as long as necessary.

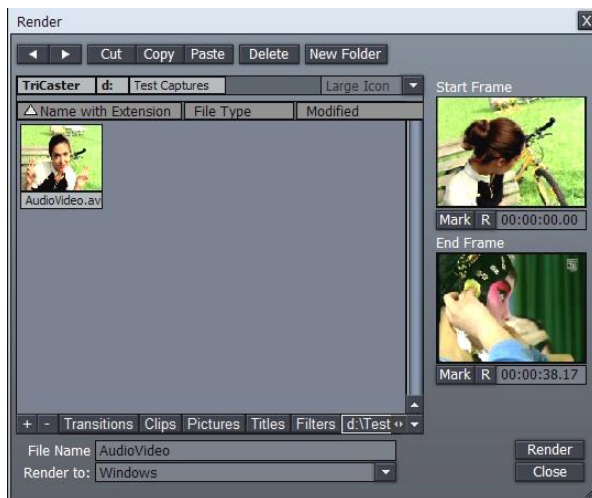


Figure 133

Note the useful “TriCaster Overlay” render option, which preserves transparency.

If you only want to render *part* of a larger project, drag left or right on the **Start** and **End Frame** thumbnail windows to select suitable frames, then click the **Mark** buttons beneath. (Clicking the nearby [R] buttons **Resets** the frame to the default.)

8.2.2 EDIT PANE VIEW OPTIONS

Just to the left of the **Overlay** button is a button (the downward triangle) which opens a menu presenting many *options* affecting the Edit pane.

The **Storyboard** option list is shorter, but can be quite useful: choose from several views, selectively displaying all project components, just the audio or video elements, or only transitions or overlays.

The list of options is longer for the **Timeline** view than **Storyboard**. To reduce system overhead (or just to suit personal taste) you may separately modify the way image thumbnails appear for your various project components – Clips, Transitions, Overlays or Effects. At the top of this menu for both **Timeline** and **Storyboard** mode is the **Time-Bar Tracking** option (the setting is shared by both edit panes.) By default, Tracking is enabled. This permits the edit pane display to scroll freely during playback to keep pace with the **Edit Line** (regardless of the Zoom level.)

Render - If you wish to render out the project, consolidating it into a single file for playback in the DDR, or to archive, the Render button in this section helps you do this.

Clicking it presents a file requester (Figure 133). Find or create the folder you want to store the rendered file in, and supply a File Name. The Render To menu lists many convenient formats you can select, including DVD compatible options, and even formats for popular mobile devices.

8.3 THE STORYBOARD

Storyboard mode is the simplest starting point for video editing, offering a straightforward interface that sequences one clip after another in an easy to grasp manner. The Storyboard allows very quick sequencing of clips simply by dragging to a new project location.



Figure 134

8.3.1 ADDING CLIPS TO THE STORYBOARD

In the **Media Bin**, navigate to the folder where you have saved your video. If you know the order of the clips in your program, you can Ctrl-click each in order in the bin to select them. Then, when you drag them all at once onto the Storyboard, they will line up retaining your selection order! (Of course you can also add clips one at a time.) You can also multi-select clips in their natural order in the Media Bin by selecting the first clip, then holding down Shift when you click the last one.

To *insert* a clip *between* two others on the Storyboard, just drag its thumbnail from the Media Bin over the Storyboard and drop it between them. Rearranging clips works the same way, by dragging thumbnails to new positions on the Storyboard.

8.3.2 TRIMMING CLIPS

The blue and green bars across the top of each icon in Storyboard represent the audio and video portions for each clip -- video is shown as blue, and audio is green.

Note: Still images have no bar at the top; Transition icons are a smaller, and also have a blue bar.

Adjust the **In Point** by holding down the Alt key and placing the cursor over the left half of the icon, so it reads “IN”. Drag horizontally to set a new In Point. Adjust the **Out Point** by placing the cursor over the right side of the clip and dragging horizontally while holding the **Alt** key.

Alternatively, you can press the left/right arrow keys to move the **Edit Line** frame by frame to the exact spot you intend, using the Project monitor as a reference. Then press either the i or o key on your keyboard (i for **In Point** and o for **Out Point**). Depending which key you press, the In or Out Point for the clip immediately snaps to the Edit Line.

Hint: If you're nimble, you can even adjust In and Out Points on the fly. Just double-click a thumbnail icon on the Storyboard to start playing at that clip, then hit i and o as the clip plays (this works with just one clip at a time, mind you.)

TRIM AUDIO ONLY



Figure 135

To alter the audio edit points only (without adjusting the corresponding video clip) hold down Alt + Ctrl as you are dragging. The green bar will move, but the blue one will not.

SLIP AND SLIDE

To move an In or Out while maintaining the length of a clip, you can perform a **Slip and Slide** operation. Hold down Alt + Shift and the cursor says S/S. As you drag the mouse, the bars move left or right accordingly, yet remain the same length. (The keystroke shortcut for ‘audio-only Slip and Slide’ is Alt + Shift + Ctrl.)

DEFAULT IN AND OUT POINTS

When you bring a clip into the editor, the software automatically sets the **In Point** one full second after the beginning of the clip; likewise, the **Out Point** is set one second before the end. This gives room for the addition of seamless transitions. Of course, you can always manually adjust the In and Out points yourself as the whole clip on file is available.

Hint: If you really want the first frame to be the beginning of the clip and the last frame the end, you can highlight the clip and hit the g key. (To maximize multiple clips in this manner, use the Tool Shed routine Video>Maximize Lengths.)

8.3.3 STORYBOARD RIPPLE

Rippling is intrinsic to **Storyboard** editing, and cannot be disabled. In a **Timeline** view, shortening a clip might leave a gap between clips, a black section of the project with no video playing – this *never* occurs in the Storyboard, due to its full-time Ripple mode.



On the other hand, depending on your chosen Ripple mode, **Timeline** operations can often result in such gaps. A gap may sometimes be a deliberate edit decision, but at other times may occur inadvertently.

Figure 136

Finding and eliminating these gaps can be very time-consuming in **Timeline** view, especially if you are zoomed way out on a long project.

The **Storyboard** comes to the rescue once again in these cases. Gaps are represented on the Storyboard by an easily discernable narrower-than-usual black thumbnail. Just click this icon, and press DEL on the keyboard, and Storyboard Ripple will close the gap easily.

8.3.4 INSERTING A TRANSITION

One simple way to insert a cross fade is to highlight the clip you wish to fade *from*, then press Alt+f. If no clips are selected when you press Alt+f, cross fades will be applied between all clips!



Figure 137

TriCaster provides hundreds of great transitions, and the **Storyboard** interface makes it a breeze to use these. Simply drag the desired transition from the **Media Bin** between two clips in the Storyboard pane.

Hint: If you wish to replace a fade or transition with another, you can Alt-drag a new transition on top of the original, inheriting the settings already established.

The thumbnail icon for a **Transition** is slightly smaller than a clip icon.

8.3.5 STORYBOARD PLAY OPTIONS

To play a clip, double-click it to start playing at the **In Point** and to stop at **the Out Point**. Hitting the keyboard Spacebar will pause playing the clip. Hit the Spacebar again to resume playing.

Whereas the double-click play ended at the last frame of the (trimmed) clip, however, pressing Spacebar again puts the **Storyboard** into continuous playback. The entire project will play until it comes to its end or you manually **Pause** or **Stop**.

Note: When a clip is playing, the edit line crawls along the Storyboard icon giving you a visual reference of your current position in the clip. If you hit the right arrow key on the keyboard, the clip pauses. Click the arrow again and it advances one frame. Hold the arrow down and it plays the clip. Hold Shift + arrow and the clip will advance five frames at a time (the left arrow key plays in reverse.)

For a quick review of a clip, Shift + Spacebar begins playback *three seconds* prior to the actual current position in the project (this is especially useful for reviewing the cut point at the boundary between two clips.)

You can play the whole project in a number of ways. On the keyboard, hit Home to jump to the beginning of the project, and then press the Spacebar.

J, K, L HOTKEY CONTROL

The keyboard shortcut, k, will also play the project (to be precise, the k shortcut toggles Play/Pause.) Pressing the neighboring speeds up the current rate of play – pressing it again speeds it up even more. Conversely, pressing the j key slows down the current rate of play; depending on the current rate of play, it will even reverse playback. Pressed repeatedly, the j key produces fast reverse playback.

(See Appendix E, Keystroke Shortcuts for the full list of hotkeys available.)

8.4 THE TIMELINE

TriCaster's **Timeline** is where most of the advanced capabilities await you. The Timeline is the best place to see relationships between audio, video and titles. It is also the only place you can easily manage overlapping layers.

TriCaster has a free-form timeline, meaning that you can place audio, video, and titles anywhere you need. TriCaster's **Timeline** can be described as 'top-down,' meaning that in multi-layered edits the base layer is at the top of the Timeline window, with foreground layers towards the bottom.

Hint: To set up a simple picture-in-picture, place the clip you want as the "pip" element in the lower layer, and use the Control panel to scale and position it to taste, then turn on Overlay.)



Figure 138

Take a look around the **Timeline**. If you are an editor, you might be spending a lot of time here, so become familiar with the neighborhood.

The **Timeline** interface is composed of three main elements: the **Edit Line** (marking your current temporal position in the project), the **Time Bar**, (the horizontal strip showing timecode at the top of the pane) and the **Tracks** that hold your clips. The area to the left of the main time area is hashed, indicating "negative time."

8.4.1 THE EDIT LINE

The **Edit Line** is the essential guide to indicate where you are in the project. Drag it left or right with the mouse. The **Time Bar** across the top of the **Timeline** indicates the timecode at the Edit Line position. Clicking anywhere in the Time Bar causes the edit line to jump to that location.

Note: sometimes a lower layer in the timeline hides a clip you wish to view temporarily while editing. A feature called Local Scrub provides an unobstructed view of any layer. Hover your mouse along the bottom edge of the clip, and the cursor will show a double-headed arrow with the word “Local”. Drag left or right to scan through just that clip.

To jump to a specific timecode location, press Ctrl-g, and enter it into the pop-up window using the format of HH:MM:SS.ff – hours, minutes, seconds, frames (it is not necessary to enter any leading zeros). For example, to jump to the 3 minute portion of a project, enter “3:00:00”.

8.4.2 ADDING CLIPS TO THE TIMELINE

The procedure for adding clips to the **Timeline** is exactly the same as in the **Storyboard**. In the **Media Bin**, navigate to the folder where you have saved your video clips. If you know the order you want for the clips in your project, you can Ctrl + click files in any order to select them.

Then, when you drag them all at once onto the edit window, they will line up retaining your selection order. (Of course you can also add clips one at a time.) You can also multi-select clips in their natural order in the **Media Bin** by selecting the first clip, then holding down Shift when you click the last one.

Newly added clips are inserted the project beginning at the point where you release the mouse button after dragging over the timeline pane.

Note: TriCaster’s ‘trackless’ timeline actually permits you to overlap more than one clip on a track, so it’s possible to drop a clip into the project in such a way as to completely cover another one on the same track. Usually you will want to avoid this by dragging new inserts into an empty spot on the timeline.

8.4.3 INHERIT

Occasionally you will make changes to a clip (for example, shortening or resizing it), then later decide that you need to replace it in the **Timeline** or **Storyboard** with a different clip. With the **Inherit** feature, when you drop the replacement clip on top of the original, the second clip acquires the properties of the original.

Inherit also makes it easy to drop in placeholder clips for scenes that you have not shot yet. You set the timing, position, or other options on the placeholder clip and continue editing. When the replacement shot is available, just hold down the Alt key, and drag and drop it onto the placeholder to inherit its settings. (This is also a great way to modify only specific elements of a frequently used composition of graphics and video clips, maintaining a common theme throughout your productions.)

To **Inherit Settings**, click the replacement clip in the **Media Bin** to select it. Hold the Alt key as you drag and drop it onto the original clip. The original clip disappears as the new clip replaces it.

8.4.4 ZOOMING AND SCROLLING

The **Time Bar** depicts major and minor time increments with timecode and tick marks. You can scroll through the Time Bar with the scroll bar at the bottom of the pane. Just click and drag it left or right. Roll your mouse on either end of the scroll bar to zoom in or out. When the cursor says zoom, click and drag your mouse away from the bar to zoom out horizontally, and toward the bar to zoom in horizontally. (If you hold the Shift key when you zoom, it constrains the other end of the zoom.)

Another convenient way to zoom in on the **Time Bar** and your clips is to use the scroll wheel, if your mouse is so equipped. Using the wheel to zoom your active timeline view always zooms centered on the location of the **Edit Line**.

Note: As elsewhere in TriCaster, if you press Ctrl while dragging, the operation will be ten times more precise. This is true for all sliders and knobs, including zooming using the scrollbars.

As is so often the case in TriCaster, there are even more ways to zoom: If you move the mouse up to the **Time Bar**, with a single click-and-drag operation you can pan horizontally and zoom simultaneously. Right-click on Time Bar, then drag left or right, and the timeline view *pans*. If you drag up or down, you zoom in or out.

To quickly zoom out to see the entire project, double-click in an empty area of the **Timeline** pane. To zoom in on selected clips only, double-click the **Time Bar**, or hold down the Ctrl key, and double-click in the Timeline background.

Note: Click the magnifying glass at the bottom of the vertical scroll bar on the right to change the height of the Timeline tracks. Drag up to enlarge the tracks, and down to shrink them.

8.4.5 TRIMMING CLIPS

There are several ways to trim clips in the **Timeline**: You can place the cursor over the edge of a clip so it changes to display **'IN'** or **'OUT'** and then drag that edge to the frame desired.



Figure 139

It is possible to drag the clip edge beyond the first or last frame, and you will see hash-marks and a **'bang'** (an exclamation point on a red triangle) to remind you that you have exceeded the actual first or last frame. This will hold that frame for as long as you wish.

You can also set the edit line at the frame you want, and press the i key to make that spot the in point or o for it to become the outpoint, and the clip will snap to its new position. Shift + i or o not only sets the in or out point, but also jump back 5 seconds and play the edit.

8.4.6 TIMELINE SNAPPING

To move a clip, simply click it and hold, then drag it. Clips in the **Timeline** have a 'magnetic attraction' to other items, and tend to 'snap' to them. For example, when the bottom or top of a clip approaches a track line, the clip snaps to that spot. The clip also snaps to vertical lines in the panel. Most importantly, a clip will snap to the **Edit Line**, and the **In** or **Out Point** of other clips.

This tendency to snap does not prevent you from moving the clip wherever you want on the **Timeline** (however, clips will insist on sitting on a track line.) You can move multiple clips in the Timeline by selecting them, and then dragging them all at once. When you drag multiple items, only the first item selected snaps. Other items maintain their relative positions to the first item.

Hint: Occasionally, you will want to move a clip up or down in the Timeline without altering its position horizontally on the Timeline. To constrain your movement to vertical dragging only, hold the v key down (press v before you click and drag). Stop dragging wherever you wish, release the mouse button, and then release the v key.

8.4.7 MARKERS

Someone famous once said, “Timeline markers are the greatest thing since peanut butter.” (OK, no one really said that ... but that doesn’t mean it’s not true.) Markers are a huge convenience. They serve as simple visual cues, like bookmarks, but offer a great deal more too.

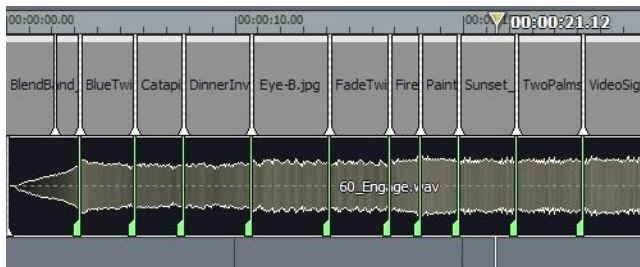


Figure 140

TriCaster provides two different types of timeline markers, the **Clip Marker** and the **Project Marker**. The creation, management, and basic features of both types are identical. The primary difference between the two is their domain. Project markers fulfill their raison d’être by clinging tightly to the global Project time. Clip Markers accompany the clip, wherever it goes.

ADDING MARKERS

You can create a **Project Marker** in several ways:

1. With no clip selected, right-click in the background area of the **Timeline** pane to open a context menu. Select **Add Project Marker**, and voila – a new marker is created at the current position of the **Edit Line**. It appears as a distinct thin green vertical line intersecting the Timeline display.

2. *Adjust* the current position of the **Edit Line**, but this time press the m key to create another **Project Marker**. Now you have two Project Markers.

Hint: You can even use this keystroke shortcut while the project is playing back. This permits you to easily mark visually (or audibly) significant events for later reference.

NAVIGATING BETWEEN MARKERS

Jump from marker to marker in the **Timeline** using the , (comma) and . (period) keys (or, if you prefer to think of it that way, the < and > keys ... without Shift mind you).

MANAGING MARKERS

Remove markers as follows -- when the **Edit Line** is located at a **Project Marker**, right-click in the **Timeline** background, and choose **Remove Project Marker** from the menu. When more than one marker is present in the Project, the menu will also offer to **Remove All Markers**. You can also left-click the mouse directly on a marker and drag to the left or right to reposition it more carefully along the **Timeline**.

EDITING MARKERS

It gets even better. You can edit the appearance of marker(s), adding useful information at the same time. Double-click the marker and up pops a small inset with three convenient features.

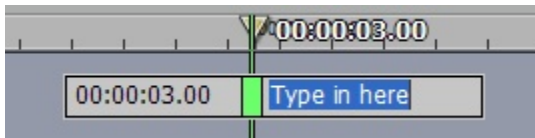


Figure 141

The **Marker Tag** field, shown in blue in the image, is active immediately after double clicking. Use this field to provide a name or comment (i.e., brief editing notes) for the marker. While in **Marker Edit** mode, you also will see another direct entry field to the left of the marker. Modify the existing *timecode* value and press Enter on the keyboard -- the **Marker** jumps to the new position.

Hint: You can even use this facility before beginning to build your project, adding a bunch of markers immediately and then entering timecode values for significant edit points decided in advance.

Centered right above the **Marker** is a color swatch. Click it to popup the standard **Color Picker**, and click a new color for your Marker. (You can use colored Markers to signify certain types of events, or simply because you've an over-developed color sense.)

CLIP MARKERS

Let's discuss the other type of marker – the **Clip Marker**. Clip Markers are identical to Project Markers in every sense, except one.

Whereas **Project Markers** know their place in the grand scheme of things, **Clip Markers** cling limpet-like to their parent objects, such as video and audio clips. Move the clip and the Clip Marker goes right along for the ride. Also, timecode shown for a Clip Marker is local to the clip.

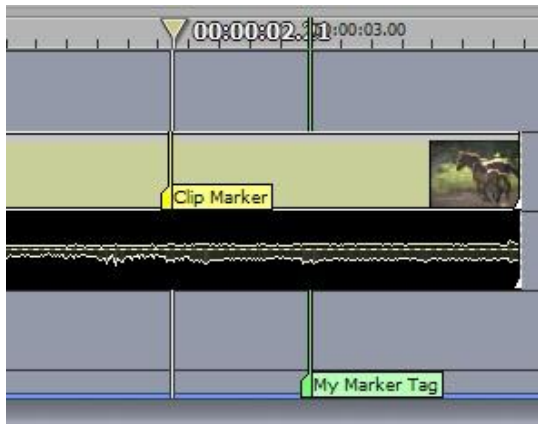


Figure 142

To create a **Clip Marker**, you need to do only one thing differently – select a clip (or clips) first, before pressing the m key (or using the menu). In all other respects – naming, coloring, and so on, Clip Markers work just like their cousins.

8.4.8 DRAG COPYING

Cut, **Copy** and **Paste** functions are available in the **Edit Menu** at right, along with their keystroke equivalents (Ctrl + X, Ctrl + C, and Ctrl + v). TriCaster offers another great copying convenience: If you hold down the Ctrl key before you start dragging a clip or selection of timeline items, you make a copy of the object(s) at the location where you release the mouse button. The source items remain in place.

Hint: This is a dynamite way to quickly flesh out project ‘templates’ for use with Inherit. You can duplicate a section of the timeline using Ctrl + drag, then update one or more elements using Alt + drag to ‘inherit’ replacement items into the clips.

8.4.9 TRANSITIONS

To easily insert a crossfade, highlight the clip you wish to fade *from*, then press Alt + f. (If no clips are selected when you press this shortcut combination, crossfades will be applied between all clips.)

You can also simply drag a clip so that its leading edge overlaps the out point of a neighboring clip on the same track to automatically insert a crossfade between the two clips (any audio associated for the clips will automatically cross fade, as well.)

Often, though, you will want to set up the transition timing yourself:

1. First, select one of the many other transitions available: Click the Transitions **Hotlist** button at the bottom of the **Media Bin** to jump to that folder.
2. Browse around until you find the one you want.

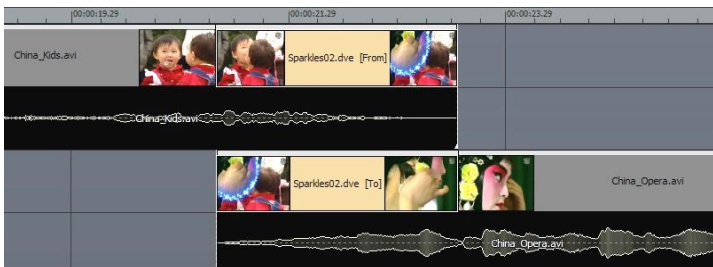


Figure 143

3. Manually position the timeline elements as follows: begin by overlapping the two clips vertically, on different Tracks.
4. Drag the Transition onto the end of one of the clips, and the result should be as shown (Figure 143).

Hint: To replace one transition with another, Alt + drag the new transition on top of the original (inheriting the current timing). You can also replace many transitions at once using the Tool Shed.

ADJUSTING TRANSITIONS

When you roll your mouse over the edge of a **Transition**, the cursor changes to a slashed frame icon, which indicates Transition edit mode is active. Click and drag the edge of the Transition to lengthen or shorten it. If the Transition is aligned with a clip, the clip's edge will move to match the Transition as you drag.

ADDING TRANSITIONS WITH THE TOOL SHED

Another way to add Transitions can be found in the **Tool Shed**. Click on the Tool Shed tab, near the **Media Bin** tab in the upper right corner of the screen. (The Tool Shed will be described in detail later, but this tool is too useful to make you wait.)

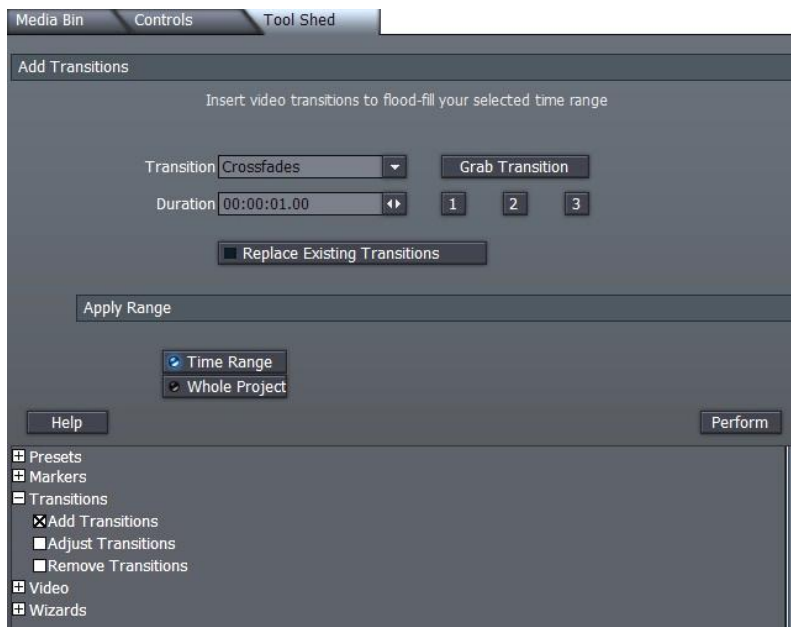


Figure 144

Click on **Transitions** entry in the category list at lower left the left, and then select **Add Transitions**. In the Transitions selection menu above, you may not find the specific Transition that you want already listed, but you can choose any one TriCaster provides. If the transition isn't in the project already, drag it out of its directory and onto the Timeline. Be sure it's selected, and then click **Grab Transition**. The Transition menu will show "User" as the current selection, and the transition name and number will then be displayed above.

Now, you can set the duration for the transition. The 1, 2, and 3 buttons are just fast ways to enter exactly 1, 2, or 3 seconds. Next choose whether the **Transition** will be added between every clip in the project or only applied to a specific range. Of course, if you pick Time Range, you need to go to the Timeline and shift-click a range of clips to mark that range. Then, click on **Perform** and the Transition will be added.

Hint: Tool Shed also provides powerful tools to add, remove or replace transitions.

8.4.10 FILTERS AND FADES

The **Filters** folder is listed among the Hotlist buttons at the bottom of the **Media Bin** panel, and contains some useful items for creative work.



Figure 145

Both audio and video filters are found here. To use one, you drag it from the folder onto the timeline. Generally, filters affect all tracks above their insertion point. Selecting the filter on the timeline permits you to access any controls and settings it may offer in the Controls window, discussed in depth shortly.



Figure 146

Individual clips (and audio samples) can also be forced to fade in and out in realtime directly on the timeline.

If you look closely at each clip you will observe a small triangle on the bottom corner at both ends.

When you hover the mouse over them, the cursor updates to show a double-headed arrow and the letters “Fd” (for Fade).

Dragging these triangles toward the center of the clip creates a progressive fade in or out.

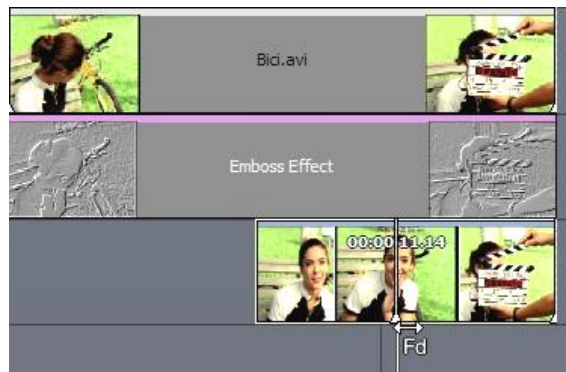


Figure 147

Note: by default, all video clips are fully opaque, so initially a Fade appears to occur over a black background. Turn on the Overlay switch in the Edit Menu to see project content in upper layers showing through the faded segment.

8.5 TITLES

Classy and professional CG elements, including scrolling credits, static titles, lower thirds and other graphic overlays make your presentation shine. TriCaster's **Edit Media** panel provides powerful titling capability, going well beyond that of many standalone edit systems.

You can begin with a blank title page, or quickly modify any one the supplied professionally designed **Title Templates** to suit your specific need. Let's set templates aside for a few moments, and consider the three 'blank slate' alternatives TriCaster provides.

8.5.1 CREATING A TITLE PAGE

Titles are added to your project by first dragging a title filter icon into it. These are located in the Titles folder, accessed by clicking the appropriate **Hotlist** button below the **Media Bin** panel.



Figure 148

The first thing to do is drag one of the three title page (.cg) icons from this folder into the timeline. Choose one of three page style icons: **Title Page**, **Scroll page** and **Crawl Page**.

TITLE PAGE

This option initially represents a straightforward static title page –the page itself and its contents are stationary. That said, the page and anything you add to it can in fact be individually animated, using options provided in the **Controls** tab. This type of title slate is commonly used for applications where images or text all fit within one screen, such as lower thirds and introductory title pages.

SCROLL PAGE

Scroll pages are typically used when large amounts of text, such as lists of names or credits, will not fit on a single screen. The successive lines of scroll pages are created one above another on the page, which can be longer than a single screen. The ‘over-size’ page scrolls from bottom to top when played back.

Type text for a line and hit return to advance to another blank line. As you approach the bottom of a scroll page, the page edges upward, keeping your current line in view so you can continue entering text. If you wish to highlight all text, you can left-drag across the page or use Ctrl + a (this allows you to globally justify all of the text you entered to left, right or center).

CRAWL PAGE

Crawls move horizontally across the screen. They are used when you wish to display a lot of text without obscuring the screen (such as to display a news feed or weather alert).

Note: Scrolls and Crawls can require a lot of processing. Often the first time you play them the page will stutter, and the Ready to Play LED at right under the monitor will remain red. After playing the page once the ready light turns blue and should be ready for smooth playback.

ADDING TEXT AND GRAPHICS

Let’s detail the creation of a basic title page. Drag the **Title Page filter** into the timeline beneath another video clip, and highlight it. To continue, we need to visit an area of the **Edit Media** panel that we’ve not looked at before. Click the **Controls** tab in the top right quadrant. The Controls panel will replace the **Media Bin** to fill that pane.

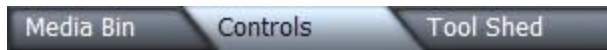


Figure 149

The **Controls** panel contents vary depending what sort of timeline item is currently selected. When a title page is selected, the pane is sub-divided into three sections – an interactive **title composition window**, a **settings panel** below that, and a **tools panel** at right.

At first, the **composition window** will be blank, showing only the **Safe Area** display. This is because you haven't added anything to the page yet. There is also a row of tabs across the very bottom of the **Controls** pane, labeled **Title**, **Draw**, **Color**, **Styles**, **Options** and **Positioning**.

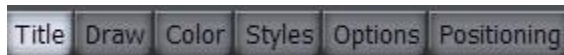


Figure 150

Selecting one of these tabs may modify the view in the **title composition window**, and also presents different controls in the **tools panel** at right.



Figure 151

To enter some text, click the **Title** tab at the bottom of Controls, and then click on the **title composition window** to display a blinking text entry cursor.



Figure 153

(You can freely reposition text later, but it's wise to keep entries within the smaller Safe Area box, the 'title safe' area.)

After clicking in the window, type some text.

Take a look at the buttons in the **tools panel** (to the right of the **composition window**.) Many of the options shown with the Title tab selected are self-explanatory. Let's start with the section labeled **Compose**.

Click a few of the justification buttons to the right to see how they affect your line of text. Justification is relative to the title safe boundaries.



Figure 152

The three buttons shown at right modify the placement of newly entered characters as you type. The default is left to right in 'normal' fashion. Clicking the button with the down-arrow on it causes new characters to appear on screen vertically, from top to bottom. The third option is right-to-left, very useful when you are entering long scroll text lines.

You can select a different font using the drop down menu supplied, and checkmark **Bold** or **Italic** to taste. Beneath this are switches to enable or disable **Shadow** or **Edge** (colored outline.)

Left-click the color swatches to the right of **Shadow** or **Edge** to pop up the system **Color Picker**, or right click the swatch, and drag it anywhere on the interface (the Edge swatch is actually a double one, with left and right sections permitting graduated color applications.)

As you drag, note how the swatch updates to reflect the color under the cursor at any given time. Release the mouse button to choose that color. (This is a great way to ensure your colors perfectly match those in your video clips.)

Note: A similar color swatch next to the Italic switch allows you to modify the default color used for the main face of your text.

The **Edit** buttons between the color swatch and the **Shadow** and **Edge** buttons permit interactive adjustment of these two attributes. Clicking Edit for either option first enables the option so you can observe the impact of changes you make.

Then, if you opt to **Edit** a shadow, the cursor over the object it becomes a 4-pointed star, indicating you can now drag the shadow without affecting the text itself. Try this, and watch the result on the main Edit monitor. If you click the Edit button for **Edge**, the pointer becomes a circular outline with an arrow reminding you to drag – dragging left or right will increase or decrease the width of the outline around the object.



Figure 154

Click the **Arrow** button in the **Compose** section of the tool panel, and your text is bounded with a box. You can **scale** the text by dragging a corner or side, move it by dragging inside the box, or **rotate** it by holding down shift and dragging a corner!

GROUPING OBJECTS



Figure 155

The **Object** section at the bottom of the tool pane is not difficult to use. Beyond the obvious, you can group objects on the title page by multi-selecting them, and clicking the **Group** button (we leave it to the reader to guess what **Ungroup** does). ☺

Note: To multi-select items on the screen, you have two options: Drag a marquee around multiple items with the mouse, or Ctrl + click them successively.

The **Depth** buttons in the same section move the current object forward (towards the foreground) or backward one level per click, allowing you to arrange objects on the screen in front to back order as you please.

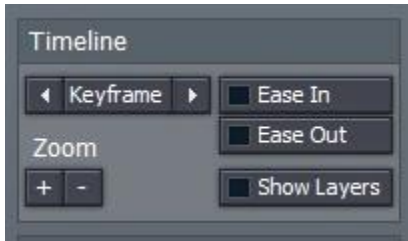


Figure 156

ANIMATING TITLES

We deliberately skipped over the uppermost section, labeled **Timeline**. Let's consider it now. Notice the **Keyframe** button? Yes, you can animate any line of text or drawing object.

Let's test this out. First though, let's note a couple of useful features: The **Show Layers** button will show the project content behind the title page you are working with. And **Zoom In** and **Out** make it easier to work with small objects, or outside the standard video frame.

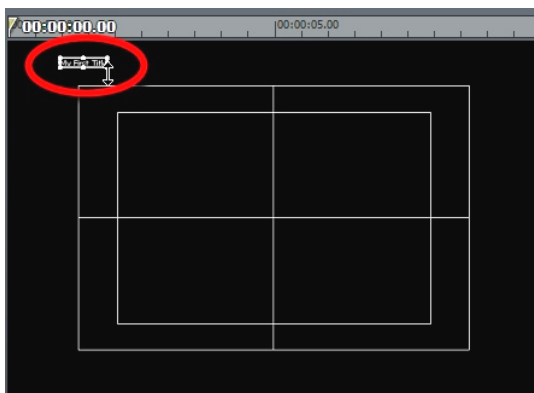


Figure 157

These can both make your current job easier at times. **Zoom out** a bit, and then drag a line of text to the upper left corner of the **composition window**, placing it just outside the active video frame.

The **composition window** has a local time bar. Move the **edit line** in it all the way to the left (the first frame of the title), and click the **Keyframe** button to mark this spot.

Now, move the **edit line** to the right – for this example, use the 6 second mark. Drag the text to a new position on the screen, as shown in Figure 158. Hover the cursor over one of the title objects corners, and drag to make it much larger.

By moving to a different point in time and adjusting the size and position of the object, you automatically created a second keyframe for those values. Once the **Ready to Play** light illuminates, you have an animated title.

Note that a small pink vertical mark has been ‘left behind’ at the left end of the **time bar**.

This mark indicates that a keyframe exists. If you click the left arrow beside the **Keyframe** button, you will jump back to that previous keyframe position – click the right arrow and you return to the next keyframe, at 6 seconds.

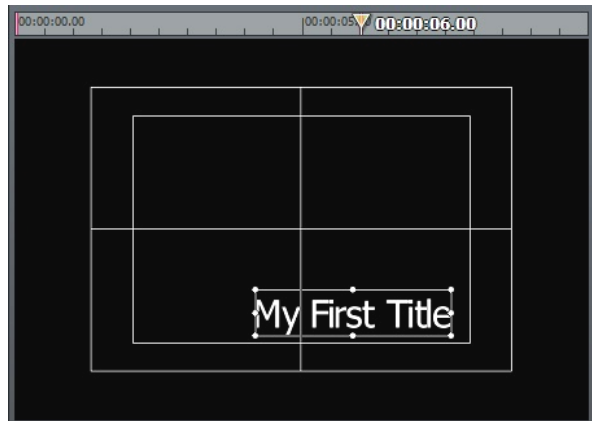


Figure 158

Hint: If you create a keyframe inadvertently, simply jump to it, and then click the Keyframe button again to remove it.

Our title animation could stand a little refinement. First, we can see that it is slamming into its at-rest position. It would be nicer if it would slow down and ‘park’ gently. Jump to that Keyframe, and click the **Ease In** button. Play your animation again – that’s much better, isn’t it?

Let’s add a fade-in to the motion effect. We could simply use the fade triangle control on the Title Page clip in the timeline, but let’s take this opportunity to briefly explore the **settings panel** beneath the **composition window**.

THE SETTINGS PANEL

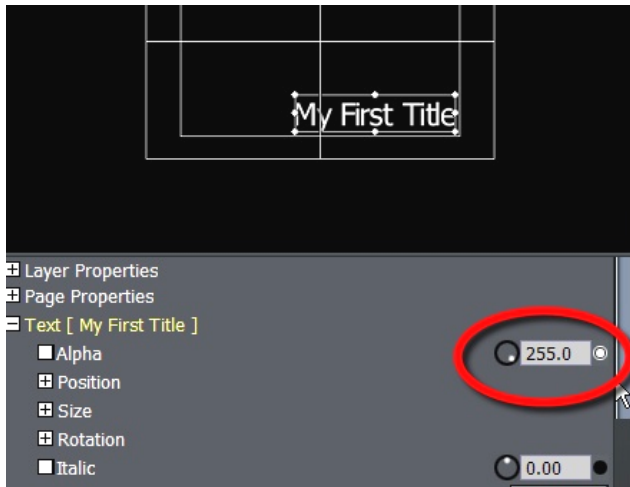


Figure 159

Click the small button to the right of the numeric field and it will turn white, indicating you have set a **keyframe** for the value 255 at the 6 second mark of your title animation.

Now scrub the time bar above the **composition window** back to the first frame, and enter the value 0 for **Alpha**. The title will begin its travel fully transparent, and gradually attain full opacity as it parks into its resting position.

Take a moment while you're here to note the nearly endless list of items that can be animated and precisely controlled in the **settings panel**:

- You could expand the **Position** group just below alpha and enter very precise values here.
- Or keyframe the **Reveal** value, which can be used to make it seem as though your text is being typed onto the screen one letter at a time.

To fully cover all of the creative options provided here would take another manual, so let's move on to consider the features presented in the **Draw** tab.

THE DRAW TAB

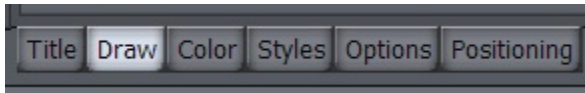


Figure 160

Our white text can be less visible than we might like when viewed against a busy video background. Let's create a stationary rectangle that will appear behind it, setting it off from other imagery behind.

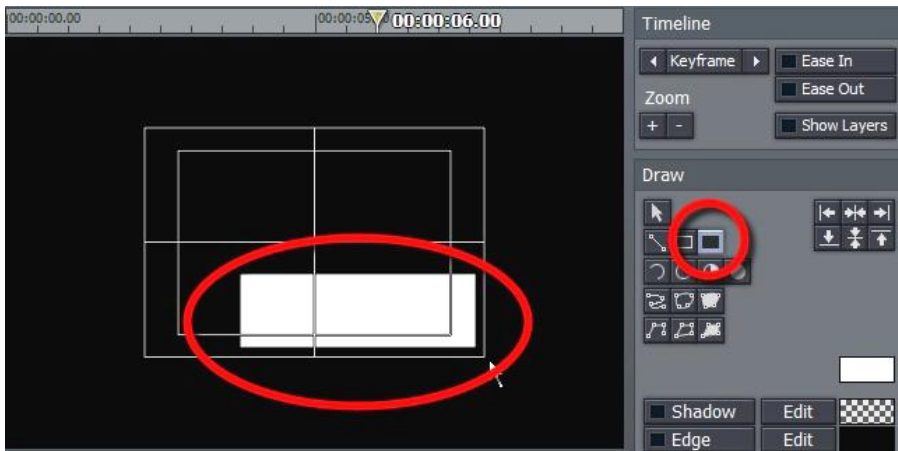


Figure 161

Click the **Draw** tab at the bottom of the **Control** pane, and select the **Filled Rectangle** drawing tool. Drag out a rectangle a bit bigger than your title (at its largest size.)



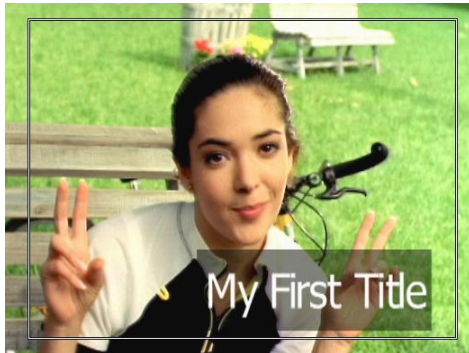
Figure 162

The new drawing object (your rectangle) is on top of the text, hiding it – we'll fix that in a moment, but first let's change its color.

Click the **Arrow** button, and then click the rectangle to select it for editing.

Now click the main **color swatch** to pick a different color for the rectangle's face (we're going to change this later, so for the moment just use any easily visible color).

Then, click the **Depth** button to position the rectangle *behind* your existing text object.



(You may wish to resize and reposition the rectangle a bit at this point, to conform to the size of the title.)

Right, that's more sensible. Now, use the main **color swatch** again to change the rectangle color to black or dark brown. Look in the **settings panel** for the **Filled Rectangle** entry in the list, and expand it by clicking the **[+]** button.

Figure 163

Set the **Alpha** value to 128. Your result should look something like Figure 163. Later, you'll want to experiment a bit with the drawing tools – they are amazingly capable. Combined with adjustments in the settings pane, you can draw - and animate - almost any shape you wish!

To end a drawing operation with one of the spline drawing tools, double-click the mouse. Spline objects such as lines and filled shapes can be modified after their creation, as well:

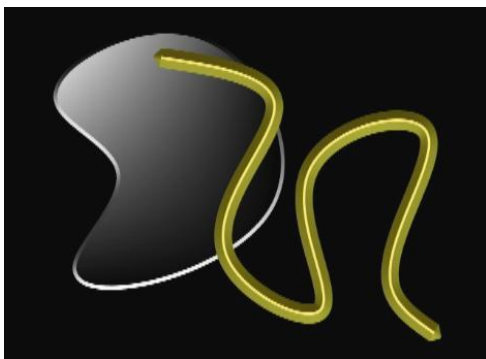


Figure 164

Select the object and resize it in the usual way, or and hold down Shift while dragging just outside a corner to **Rotate** it. If you press shift while right over a corner, you can **Shear** (italicize) the object by dragging.

You can even add and reposition the vector control points defining the object. To do this, hold down the Alt key. As you near a control point, the cursor will read **Delete** – click a point to remove it.

Conversely, when you are above a vector line but *between* control points, clicking the mouse button will **Add** a new point. Press Alt and drag to reposition a control point.

STYLES

Let's continue our tour of the tabbed panels.

The default white text is a bit bland, so select your text object in the **composition window**, then click on the Title Styles tab lower right. Here you are presented with a wide range of text treatments.



Figure 165

With your text still bounded in its box, you can click on any style, and the text assumes those settings. Any style can be modified and added to the styles bin.

THE OPTIONS TAB

Click the **Options** tab next, and you will see an array of convenient tools and display options to assist you in creating your CG masterpieces.

Use the **Grid** to carefully position items in a row or column (**Snap** can help with this.)

Guides are lines you add wherever you like temporarily to assist with alignment – they never appear in the result. Click **Add Vertical** or **Horizontal** to place a new guide, then drag the mouse over it to position it.



Figure 166

THE POSITIONING TAB

This final tabbed panel gives you a little more room in the **composition window**, and also provides a convenient **Reset** button for keyframes. As well, it gives access to some ‘full page scope’ interactive tools like Crop and Smoothing (these correspond to the tools by the same name discussed later in the main Controls section, so we’ll leave coverage until then.



Figure 167

PRE-BUILT TEXT PAGES

The **Templates** folder is found by clicking the Titles **Hotlist** button. Here you will find more than 170 professionally designed CG page styles which can be modified for use in any project. The changes are saved as part of the project, but if you wish to re-use this page, you can hold down the Ctrl key and drag a copy of that .cg page into a **Media Bin** folder. This copy can then be quickly re-used in other projects.

Note: These templates are not compatible with the Live Production Text feature. However, they can be rendered and then added to a DDR for use with the Overlay feature. In some cases, you may wish to use the Render> TriCaster Overlay (avi with alpha) option to retain transparency.

YOUR OWN CUSTOM TEMPLATES

To save any of these pages, navigate to the Media folder you wish to store it, and Ctrl-drag a copy of it from the project into the folder. You may rename this VT Data file if you wish as a *.cg page for later use.

CONTROLS

The **Controls Tab** serves several purposes: animating, rotating, sizing, cropping, adding shadows and edges, keying, and color correcting video layers, as well as editing titles and tweaking audio.

The lower pane of **Controls** hosts a long list of attributes you can modify and animate. The list shown will depend on what sort of item is currently selected in the editor.

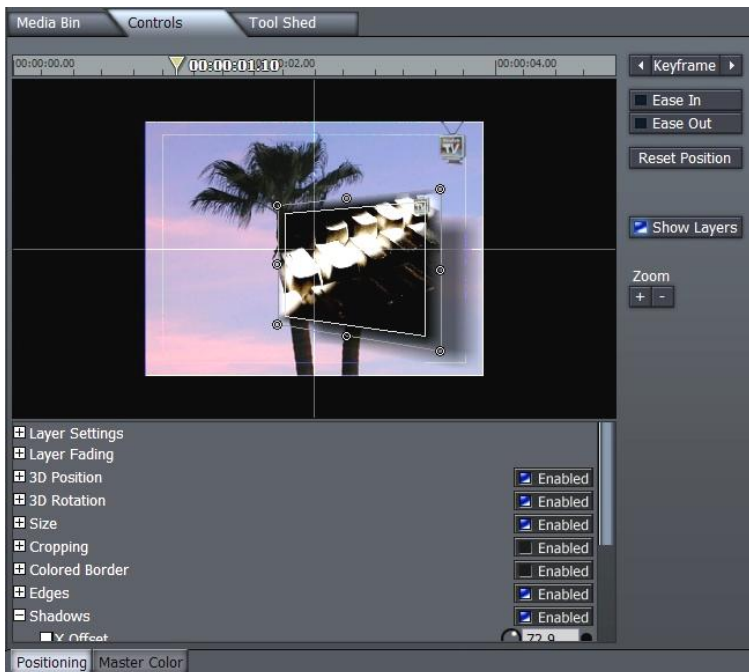


Figure 168

The options here are endless, and in some case the best way to become familiar with them is simply to select a clip and start experimenting. You'll be astounded at the realtime power at your fingertips! We'll look at some of the more important features next.

Before we get into some of the truly exciting options provided in **Controls**, let's spend a few minutes on the **Layer Settings** section. As intuitive as TriCaster's editor is, there are so many file formats that it may 'guess' wrong at times when you add a clip; or you may want to tweak slow motion speed precisely. These important settings are in this section.

LAYER SETTINGS

Select a clip, and click the [+] at left in **Controls** to expand **Layer Settings**.

ASPECT RATIO

The Aspect Ratio menu provides a large array of Image Aspect presets. By default, it is set to Auto. The Auto mode essentially instructs the editor to examine the current clip, and conform it to the project Image Aspect, without sacrificing its own proportions.

For example, **Auto** mode (usually) recognizes that the High Definition 16:9 video clip you loaded into your (Standard Definition 4:3) project has to be scaled down, but that you do not want the image to appear distorted. Aspect and Size are automatically balanced, with the result that the clip is correctly displayed as letter-boxed.

If you wish to override this default (**Auto**) setting, you could simply raise the automatically chosen **Size** value until the clip fills the frame horizontally, up-scaling even further to produce a cropped full-frame view on the Output.

Hint: In a few cases, the file format of the clip may lack sufficient information to automatically discern the proper Image Aspect. In such cases, you can manually select something suitable from the long list of presets provided.

FIELDING

Standard definition video is almost always interlaced, comprised of two separate video fields. TriCaster's editor will generally auto-select the correct field dominance when you add clips. When necessary you can choose a different field order manually using this setting.

QUALITY

When you are positioning and/or scaling an image asset, this setting permits you to raise the quality of the algorithm applied when you see a need to do so.

The **High Quality** setting uses full interpolation and sub pixel correction (taking about 30% more CPU power than **Low Quality**.)

Hint: Use High Quality sparingly. The result often looks just fine, especially when a clip has not had its position animated.

IMAGE SUPER-SAMPLING

ISS maximizes image fidelity during scaling, and is off by default because of the increased processing it demands. Enable it only if you notice any minor problems at the edge of clips or graphics when the source is being dramatically scaled (ISS has no effect on clips at 100% size).

BG COLOR

If the clip is displayed at less than project size, the default background in non-image areas of the Output is black. BG Color allows you to specify another color (a useful ability when producing a photomontage, for example.) Click the color swatch next to BG Color to open a Color Picker, or use the RGB knobs or direct entry fields to set the BG color. You can also right-click in the box to activate the Eyedropper tool, and then select a color from anywhere on the desktop.

Hint: When you right click and drag from the color swatch to anywhere in the interface, the color in the swatch updates as you move the cursor. The actual color selection is only made when you release the mouse button.

(Before trying this, change the Size setting to 70%, so you can view the results of your experiments un-obscured.)

Hint: Remember that holding the Ctrl key when you twist knobs or drag sliders enables 10X accuracy.

Like most Control options, color settings can be keyframed over the duration of the clip. So you could start out with a white frame, turn it to red in the middle of the clip, and by the end, make it green.

BG RENDER

This setting forces the section of the timeline occupied by the clip to background render. This is useful for particularly complicated sections of the project that tend to stutter on playback.

NON ITU-R BT601 COLOR

This is a per-clip control for modifying the default pedestal setting from the project standard.

ANIMATION

We discussed several examples using the **Positioning** panel to keyframe values back in Section 0, and again under the heading **Animating Titles** in Section 0 of this chapter (where we also considered **Ease In and Out**.) You may wish to review those examples to refresh your knowledge.

8.6 AUDIO

If you select an **Audio** file in the workspace, **Controls** presents a different interface to adjust audio levels and balance.

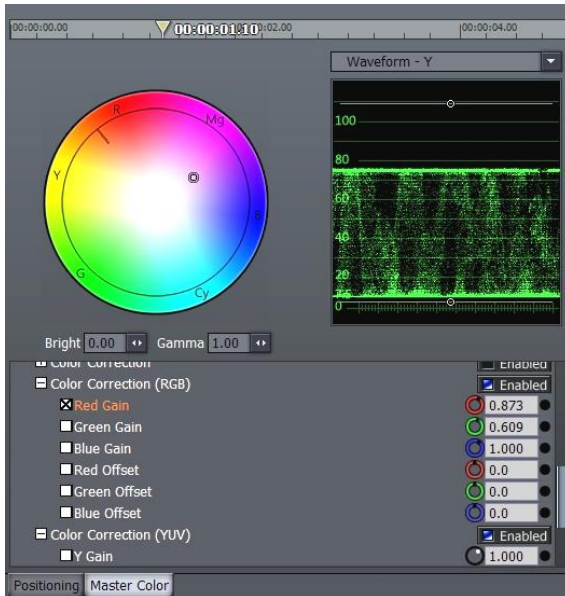


All control parameters can be animated by using the **Keyframe** button, scrubbing to the next point of audio or video, and setting the next keyframe (including the **Stereo Balance** slider.)

Figure 169

8.7 MASTER COLOR

One section of **Controls** that we haven't looked at yet is the **Master Color** panel. Click that tab (next to the Positioner tab at the bottom of Controls.)



The main **Color Correction** section of the Control List at left breaks out to reveal many sub-sections.

These include **Color Correction**, **Color Correction (RGB)**, and **Color Correction (YUV)**.

Figure 170

In addition, the panel now displays an interactive **RGB Color Wheel** and (by default) **Waveform** luminance scope. Before we consider these interactive controls, please expand the **Color Correction** sub-section, and examine the **White Balance** controls. These can be very handy, and are easy to use.

A.1.1 WHITE BALANCE

If every light source on the planet were the same color, your camera wouldn't need any white balance controls. And if you had perfect memory, neither would your edit suite. But that's not the kind of world we live in, so these **White Balance** controls are pretty nice to have.

The three-color channels the tool works on are listed separately, and the values for each can be manually edited if you wish. That's a tedious approach though, so all you really need to do is right-click the color swatch provided, and either:

- Click the spot in the image that is closest to white already.

or ...

- Keep pressing the mouse button as you glide around the image, and watch both the color swatch and correction update in realtime as you do so – until you find a result you are happy with.

The next section of the simple **Color Correction** group holds familiar tools:

Brightness – adjusts the luminance (lightness and darkness) of the video signal.

Contrast – adjusts the levels of gray in the signal (co-incidentally, also affects the brightness and saturation of an image.)

Saturation – refers to the intensity of color in the video signal. Low saturated pictures look gray, while overly saturated images show colors that bloom to the point of smearing.

Hue – adjusts the relative phase of color and works on the principle of a color wheel. As you rotate the knob either way, you cycle through the colors. The functional range is between 0 and 360.

Gamma – part brightness and part contrast, when applied, Gamma can improve the contrast of the mid-range of an image's tones, without damaging either its lightest and darkest values. The net result can be a more dynamic image, literally.

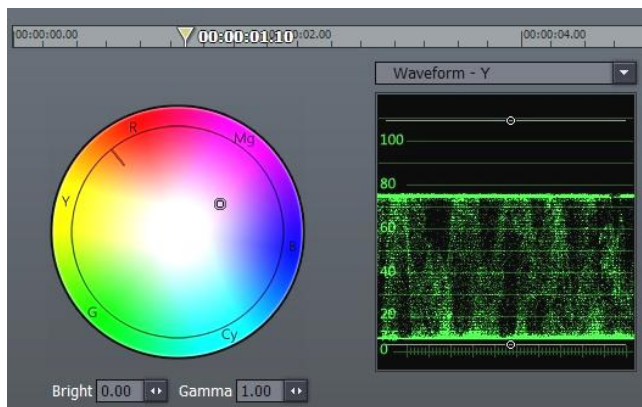


Figure 171

Before considering the rest of the tools in the **Color Correction** section, we need to pause and familiarize ourselves with the features of the **Master Color** tabbed panel. This pane features a standard RGB color wheel on the left, and a Waveform monitor displaying the selected clip's Luminance levels (represented as the Y value in YUV color space) at right. Let's watch how this panel interacts with and displays the various color settings in the Tree listing to the left.

8.7.1 COLOR CORRECTION — RGB/YUV

Expand the **Color Correction (RGB)** group. Drag your cursor around in the Color Wheel and watch how this affects the values shown in the **Red, Green and Blue Gain** fields in the settings pane. As you might expect, the converse is also true. Adjusting the **Brightness** and **Gamma** settings trigger matching changes in the corresponding numeric fields in the Master Color pane, too.

The **Waveform** display is also an interactive control panel. Drag your mouse over it, please. As you move close to the white lines indicating your pedestal (0 or 7.5 IRE) and the 100 or 110 IRE established as maximum, the cursor displays "Y Gain" - dragging will adjust the corresponding value in **Color Correction (YUV)**. Dragging in the middle of the range adjusts the **Y Offset**.

Click and hold the drop-down menu directly above the **Waveform** display, and choose **Waveform YUV**. Now you have the same ability to adjust each of those values (discussed in more depth below) graphically too, with realtime results showed on the Output monitor, and scope-accurate information at your fingertips.

The **Waveform RGB** option provides like ability using RGB color calibration in place of YUV.

With respect to the **Vectorscope**, dragging inside the scope moves the cross-hairs, resulting in either a **U Offset** (drag horizontally), **V Offset** (drag vertically) or **Hue** shift (drag outside the cross-hairs to rotate the hue through the color spectrum.)

Let's get back to the **Control** settings pane now, and discuss the meaning of the Color Correction values we've been tweaking:

Gain is similar to **Saturation**, except that when you adjust the **Gain**, you increase or decrease the saturation of just one color channel of the video signal. Adjustments affect other colors in the image only to the degree that they are composed of it. For example, if you look on the 3-Band color Vectorscope, you will see that modifying Red Gain affects Red, Magenta and Yellow.

Offset, while similar, affects every color in the video signal, even black. Rotate clockwise to increase red saturation, counter-clockwise to decrease it. Adjusting Red Offset shifts the entire signal diagonally in the Vectorscope.

8.8 TOOL SHED

There are many repetitive tasks when creating a video, and if you find yourself drifting from the fun of creation and getting burdened by click...drag, click...drag, it's time to stop and take a look within the **Tool Shed** tab. This collection of ready-to-use tools will help you create faster, with more effort spent on telling the story, and less time devoted to wondering how to do it.

This is something that merits exploration, and should prove to be quite fun! Better yet, there is an assistant just a button away. If you would like more information on any of the tools, select that tool and click the **Help** button.

Most **Tool Shed** functions follow a very simple recipe: Select a clip (or a series of clips) choose a tool and click Perform. There are far too many tools in the **Tool Shed** to explain all of them; fortunately, many are self-explanatory and so simple to use that you'll want to make sure the client isn't peeking over your shoulder when you click!

Let's have a peek at a representative sampling of Tool Shed abilities.

DEFAULT PRESETS

Click the **Tool Shed** tab, and then click the [+] button to the left of the **Presets** label in the lower section of the panel to reveal two options: **Default Presets** and **User Presets**.

Choose **Default Presets**, by clicking on it, and the upper panel will fill to overflowing with a list of tools you can use. Roughly half the entries in this group are **Color Filters**.

To demonstrate, highlight a clip in the editor, and click the **Color Filter - Sepia** entry.

Click the **Perform** button and your selection is instantly applied (no downtime rendering effects using your realtime TriCaster features).

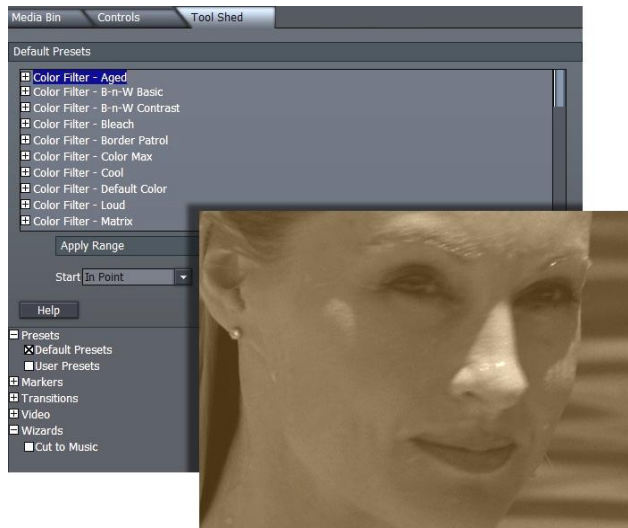


Figure 172

Other tools in the **Default Preset** listing perform elaborate wipes, as well as various common scaling routines (the latter are great time savers when you have to modify many clips at once).

The **Start** and **End** menus permit you to process just part of the clip. **Mode** is relevant for **Tool Shed** effects that have changing values over time, controlled by keyframes. If your current clip is longer or shorter than allowed for in the original effect, you can **Preserve** the original timing from the start of the clip, or at its end – but more often than not you may want to **Scale** the keyframes to perfectly match the new duration.

USER PRESETS

The **User Preset** section is worth its weight in gold (using the heaviest pixels you can find) ☺

It works like this: Select a clip, and use the **Controls** pane to do anything you like to it – set up custom color correction, transparency, a 3D rotation ... anything you can think of.

Click **User Presets** in the **Tool Shed**, and then click the **New** button. Supply a name in the text field that pops up, and press Enter on the keyboard. Your new custom preset is added, and can be used over and over again, or be applied to many clips at once -- just like the **Default Presets**.

Note: In both sections (Default and User), you can selectively enable or disable specific attributes in the effect settings. Click the [+] button next to an item (such as Layer Settings) to toggle its application in the current effect. (It's useful to know, too, that you can create presets retaining only user-modified attributes by first holding down the Shift key when you press New.)

MARKERS

Timeline markers (discussed earlier in Section 8.4.7, Markers) serve many purposes. The tools in this section permit you to add, edit and quantize marker positions in various convenient ways.

TRANSITIONS

The Transitions group in the Tool Shed lets you add Transitions to a few clips or you entire project at once. You can also adjust the timing of existing Transitions, or replace them with a different one.

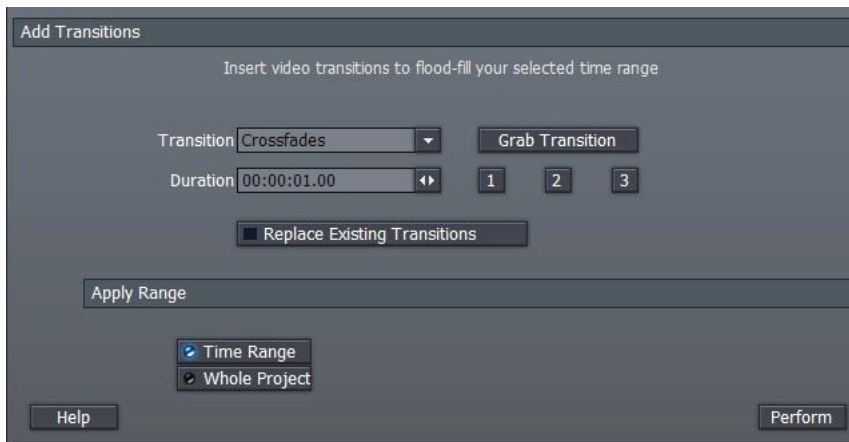


Figure 173

The options are easy to understand, and **Help** provides reminders if necessary.

VIDEO

The Video group provides some wonderful tool. You can reset clips to news lengths, **Stabilize** shaky video, and much more. Let's consider an example using the **Match Colors** wizard.

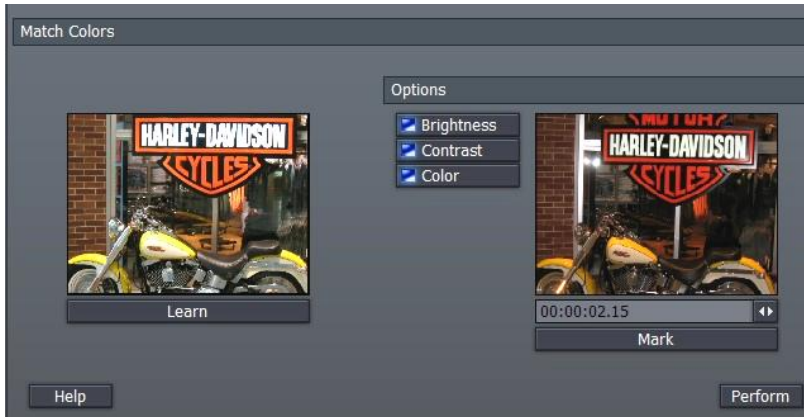


Figure 174

In this case, we have two similar clips, but one was underexposed.

To correct the problem, we select the correctly lit shot, and click **Learn**. Then select the second clip (the poorly lit one) and click **Perform**. It's that easy.

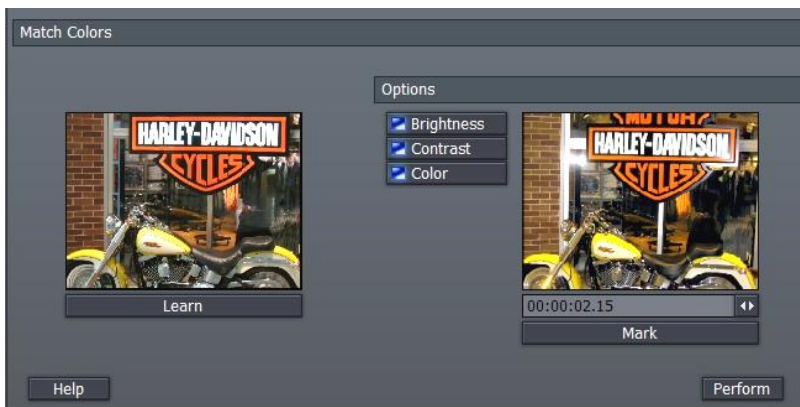


Figure 175

Figure 175 shows the result. In the **Options** section of the panel, you can individually toggle the effect's operation on **Brightness, Contrast and Color**.

WIZARDS

In the Wizards group, you will find the **Cut to Music** item. This is a wonderful too, and can make you look like an MTV pro with a few clicks!



Figure 176

An example of its use might be a corporate photo montage. You have a folder of digital photos from an event to use. You drop them all into the project, where they assume the default 5 second duration assigned automatically in TriCaster.

Next, you drag the music file you want to use for the project onto the timeline, and select it. Click the Play button, and as you listen to the music, press the m key on the keyboard at each main beat you hear. When you're done, simply click the Perform button in the Tool Shed, and your clips are all perfectly trimmed.

Hint: for slower music, you may want to use the Tool Shed's Video tools to change the default length of all your photos or clips to something longer first. Afterward, you can use the Tool Shed again to add transitions at each cut, too!

See why they call it a "Wizard?" 😊

9 EDIT TEXT



TriCaster includes one powerful and professional title and graphic creation software. The Edit Text tab houses everything needed to create great looking title pages to suit your specific needs.

This chapter explains the Edit Text tools and features, explaining how you can quickly create both static and animated text and imagery to achieve high-end production values.

To reiterate what was said earlier (in the Walkthrough section), **the Edit Text** panel provides deep professional character generation facilities. You can use it to design and manage great looking still and animated text and graphics for your productions (whether Live or Edit Media projects.)



Figure 177

For live production purposes, **Edit Text** creations can be utilized as **Overlays**, supplied by the **DDR** modules, or as *custom templates* for the **Text** module. Alternatively, you can even create a

custom **LiveSet** for use in **Input Setup**. And of course, exported title/cg pages can be used as graphic elements in **Edit Media** projects too.

9.1 INTERFACE LAYOUT

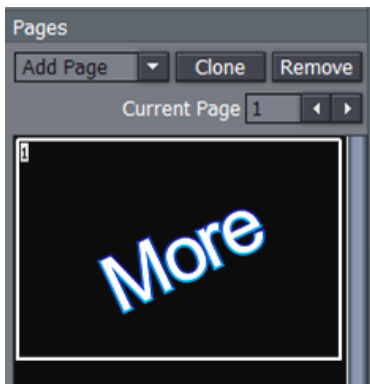
The main panel is dominated by the large, central **Canvas**, which provides an interactive display of the current project page. The column to its left is a **Tool Panel** for creating and editing visual elements, including text. The **Motion Panel** located just below the Canvas permits you to create animated scrolls or crawls.

Just beneath the **Motion Panel** is a tabbed **Control Panel** giving complete control over attributes of text and graphic objects. Finally, a column down the right side of the Canvas provides multi-page management of your project, and various file **Load**, **Save** and **Export** functions.

9.2 PROJECT PAGE MANAGEMENT

Edit Text projects consist of one or more *pages*. If you create one graphic for a title, another for a station ID, and another of scrolling credits each of these exists as a separate project page. Completed pages may be saved (**Save**), or saved with a new name using **Save As**, exported as image or animation files, Custom Templates and even as LiveSets using **Export Page/Project for Live..**

9.2.1 THE PAGES PANEL



The **Pages Panel** at the right of the **Canvas** displays a thumbnail for each page in the current project, and provides basic page management tools. A new project will show one (empty) page.

Just above the thumbnail display column is the **Current Page** selector. You can quickly jump to a certain page in your project by entering the page number in the **Page** field. Or you can cycle up or down through the pages by clicking on the neighboring arrow buttons.

Figure 178

Clicking **Clone** copies the page represented by the currently highlighted thumbnail, pasting the copy below that page.

Hint: Clone permits you to quickly and easily ensure pages conform to a particular graphic theme or format – just Clone an adequate number for you needs, then modify them individually.

Clicking **Remove** deletes the currently selected page from the project (careful, there is no Undo for this action.)

ADD PAGE

You click the arrow button beside **Add Page** to insert another page into your project (new pages are added under the current page.)

The drop-down menu reveals a number of types of pages you can add:

The uppermost choices represent new blank pages of various types.

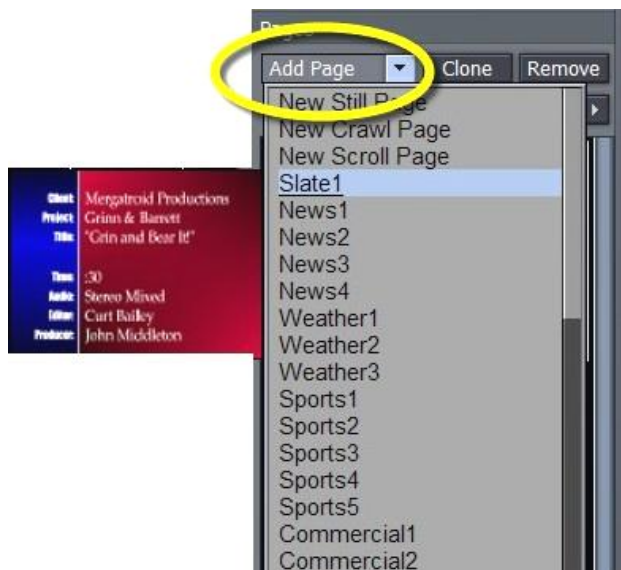


Figure 179

Hint: You can also quickly add blank pages simply by clicking repeatedly in an empty black area of the thumbnail column – each click adds one empty page.

Below this is a long list of professionally designed templates, ready and waiting for your modifications. As you scroll over the entries, a fly out thumbnail representation appears to make choosing something just right for your needs easy.

Hint: Another selection in the Add Pages menu permits you to “Add Page to Templates List.” This lets you store the currently highlighted pages as templates, for quick access and consistent styling using templates of your own design.

9.2.2 PROJECT

The **Project** panel contains project and page file management tools. Projects and (editable pages) are stored as *.cg files. Clicking **New** clears the current project, and opens a new blank one.

Load also clears the current project, normally replacing it with one you have previously saved as a .cg file.

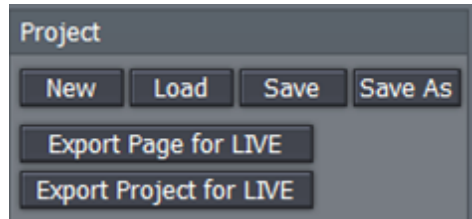


Figure 180

Hint: You can change the file suffix filter in the file requester to show files ending in .txt, then import long lists of textual data prepared in standard ASCII text format and saved as a .txt file. This process is also detailed in Section 0, Import Text,

The **Save** button stores all pages of the current project at a location you choose using the File Requester provided. Re-saving an existing project file occurs instantly. To save a new version of such a file under a new name, click **Save As**.

EXPORT OPTIONS

The **Export Page for LIVE** and **Export Project for LIVE** functions convert the highlighted page or project for application in your LIVE productions.

Exported CG pages can be employed as **LiveSets** from **Input Setup**, as **Text Templates** from the LIVE Production **Text** module, or as images or animations from the **DDR** playlist. In the last two cases, if the page(s) contain transparent areas, the transparency will be retained if you place them over your program stream using **Overlay**.

Any **Still** (no motion) pages created by the Export functions are automatically inserted into the list of templates available for the Text module (Text Page group), as well as being listed as individual **Shots** in the **LiveSet** menu when you select CG Designer as the **Scene**.

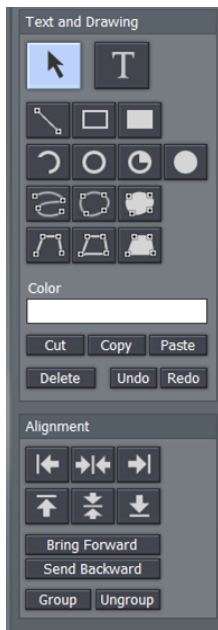
Note: Clicking one of the Export buttons presents a dialogue which allows you to choose whether to Append the new entries or to completely Replace the current list with your Edit Text selection(s.)

Motion pages (scrolls or crawls) are exported as AVI files with alpha channel. These page types are *not* available in LiveSet or as Templates, but can be added to the DDR playlist (you will find Edit Text exports in D:/Media/CGs.) Again, when there are transparent areas in the animation, these will be respected if applied via the **Overlay** module.

9.3 THE TOOL PANEL

The Tool Panel situated left of the **Canvas** provides the basic tools for creating both text and graphic elements of your title page compositions, establish their relationships to one another if any, and set their primary attributes.

9.3.1 TEXT AND DRAWING



T (Text)

Click on the T (Text) button to activate the text function. Before you enter text, this button must be highlighted.

Click in the **Canvas** and an I-beam icon starts blinking. This is your text entry cursor. The I-beam is the insertion point for text. You can move it anywhere on the Canvas by clicking it with your mouse and dragging it around or just clicking your mouse on another spot in the Canvas.

To edit the characters of any existing text, click your cursor anywhere on the line of text, and drag your mouse to select letters or whole words (selected character will be highlighted).

Figure 181

*Hint: Use the End and Home keys on your keyboard to navigate to the beginning and end of text lines. If you mistyped, you can use the Backspace key to erase or the keyboard **arrow** keys to go back or forth on the line or up and down between lines.*

Arrow (Selection)

Clicking on the **Arrow** button activates the **Selection** tool (and switches off the **Text** tool). This selects the whole line, not just parts of it. If you have just typed something in, clicking the Arrow will create a box around what you typed. Select the line by clicking anywhere on it.

When you roll your mouse over the box, the cursor changes form. When it becomes a two-headed arrow, you can click to grab an edge of the box and drag it in or out to resize the text. When the cursor sprouts four arrowheads, you can click and grab the whole box to move it around the **Canvas**. Hold down the Shift key over a corner of a selected object and a curved arrow appears, indicating you may now drag to rotate it.

GRAPHIC SHAPE TOOLS

The area immediately below the **Arrow** and **T(Text)** buttons is home to a number of tools used to create shapes. Each shape is initially a separate graphic object.

The tools are very easy to use, and just as easy to edit at any time after their creation, whether simply to adjust their position, or to add or modify much more elaborate treatments.

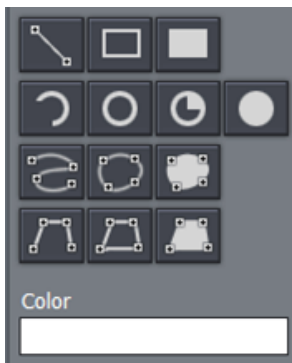


Figure 182

For the most part, shapes are easily created by clicking one of the buttons, and dragging the cursor in the **Canvas**. The shape responds interactively to your movements, and is created when you release the mouse button.

- **Line** – To make a straight line, you simply click in the Canvas where you want the line to begin and then drag the mouse to where you want the line to end.
- **Rectangle** – The Rectangle button creates outlines of four-sided objects.
- **Filled Rectangle** – This tool works like the Rectangle tool, except it fills in the shape with the same color as the outline.

- **Arc** – In the second row of Drawing Tools are variations of ovals. With the first, you can create segments of arcs. Click the mouse in the Canvas and drag to establish the radius of the arc, releasing the button when you are happy. Then click and drag again to define the extent of the arc. Release the button to complete it.
- **Oval** – The Oval works just like the Rectangle tool. You click and drag in the Canvas to draw out your shape.
- **Filled Arc** – The Filled Arc operation is the same as the Arc tool (see above). The only difference is that the arc created is filled in. Think of the Filled Arc as the ‘pie chart’ tool.
- **Filled Oval** – This tool works like the Filled Rectangle.

- **Spline** – This tool and its siblings create freeform spline curve shapes. Click in the Canvas and release the mouse to establish the starting point. Move to another spot on the screen and click again to establish a second node through which the spline will pass. Continue to add nodes until you are satisfied, then double-click to end the curve.
- **Closed Spline** – The technique for the Closed Spline is similar to the Spline: click in the Canvas, release the mouse, move to the next spot and click again, etc... With this tool though, nodes are automatically connected to the first (anchor) point to create an enclosed object. When you’re finished, simply double-click.
- **Closed Filled Spline** – This tool works just like the Closed Spline tool except it fills in shape with the same color as the outline.

- **Polygonal Line** – This tool functions like the Spline except it doesn't create a curve between the nodes. You click in the Canvas to establish your anchor point, release the mouse and move to your next spot, and click to create a node. A straight line will connect the two points. Move and click again and a line will connect this point with the previous one. With this tool, a sharp angle is maintained at the intersection of the lines. You double-click at the last point to finish.
- **Polygon** – This tool works like the Polygonal Line, except as soon as you create the first node, it's connected to the anchor point, automatically creating an enclosed object.
- **Filled Polygon** – This tool works just like the Polygon tool except it fills in shape with the same color as the outline.



Figure 183

Color – The large color well below the drawing tools permits you to set a base color for the objects you create using the tools. Left click it to open the Color Picker panel, or right click and drag to use an eye dropper cursor to pick a color from the screen.

*Note: Extensive control over color is provided in the **Color** section of the tabbed **Control Panel** discussed a bit further on in this chapter.*

OBJECT MANAGEMENT

Completing this section are essential basic editing tools: **Cut**, **Copy**, **Paste**, **Delete**, **Undo**, and **Redo**.

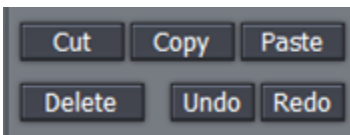


Figure 184

The traditional Windows keyboard shortcuts also work, as follows:

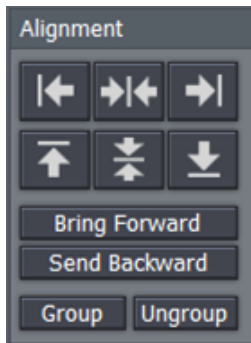
- Cut — **Ctrl + x**
- Copy — **Ctrl + c**
- Paste — **Ctrl + v**
- Delete — **Delete** key
- Undo — **Ctrl + z**
- Redo — **Ctrl + y**

9.3.2 ALIGNMENT

The **Alignment** panel permits quick and easy positioning and re-ordering of objects on the Canvas.

HORIZONTAL JUSTIFICATION

The top row of buttons in this section control horizontal justification buttons, aligning text as are commonly found in word processing programs.



Left Justify - aligns your text to begin just inside the left edge of the Text Safe Area

Center - aligns the center of the line(s) with the center of the Text Safe Area.

Right Justify - aligns your text so the end of the line(s) is just inside the right edge of the Text Safe Area.

Figure 185

VERTICAL JUSTIFICATION

Each of the buttons in the next row justifies your text within the vertical Safe Text area of the screen.

Top - aligns your text just below the upper limit of the Text Safe Area.

Center - centers your text vertically in the Text Safe Area.

Bottom - aligns your text just above the lower limit of the Text Safe Area.

DEPTH CONTROL

Text and objects on the **Canvas** which occupy the same space are normally displayed in the order created – ‘oldest’ items to the rear, as it were, with newer object in front. The depth controls in this section permit you to modify this order. Select an object (or line of text) and click once to move one step relative to other objects.

Bring Forward – move the selected item forward

Send Backward – move the selected item back

***Note:** The **Layer** section of the tabbed **Control Panel** discussed a bit further on in this chapter provides an alternative (and often more convenient method) of re-ordering objects and text.*

GROUP /UNGROUP

Even though each line of text and graphic object is really a separate entity, you can select multiple lines and **Group** them together to respond to modifications in unison.

The **UnGroup** button undoes the union. Hold down the Ctrl key while clicking multiple items or lines of text and press the Group button. The bounding boxes are now replaced by a single bounding box. Hit UnGroup again, and the lines become separate entities once more.

9.4 THE MOTION PANEL

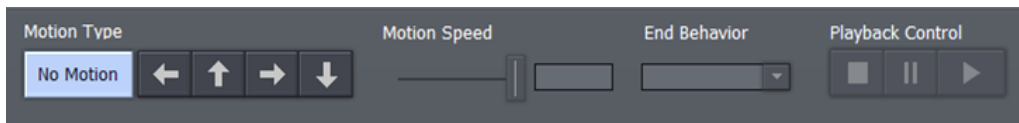


Figure 186

The **Motion Panel** contains the tools to create both scrolls and crawls. This is where you control the direction, speed and behaviors of your crawls and scrolls.

The **No Motion** button and **Direction arrows** are self-explanatory. If you want a text **crawl** from left to right, pick the right pointing arrow. For a **scroll** moving up, choose the up arrow, etc.

9.4.1 SPEED CONTROL

In the **Motion Speed** field, choose a specific rate of motion in units of ‘pixels per frame.’

Fun with math: For a text crawl across an NTSC format screen, knowing that the screen is 720 pixels and there are roughly 30 frames per second, you can readily work out a suitable value. To have an object or text item crawl from one side to the other in four seconds, 720 divided by 120 (30 frames per each of 4 second) equals 6.

If motion pages move too quickly, motion may not appear smooth. A common preference is for a line of text to take about seven seconds to travel from the bottom of the screen to the top. You may wish to test the speed out on a TV monitor to see if it suits you.

9.4.2 END BEHAVIOR

The **End Behavior** setting in the **Motion Panel** determines what happens when an animated page runs its full course.

- **Over** tells the CG to scroll or crawl the page once, and then stop when the page has left the screen.
- **Stop** tells the CG to scroll or crawl the page once and then to hold on the last line of text.
- **Loop** tells the CG to loop the page continuously.
- **Loop + Frame** tells the CG to loop the page continuously and to place a blank frame between each loop iteration.

9.5 CONTROL PANEL TABS



Figure 187

Near the bottom of the screen (beneath the Motion Panel) is the multi-tab **Control Panel**. The individual panels provide precise command over countless text and graphic object attributes, as well as their organization and management.

9.5.1 VIEW

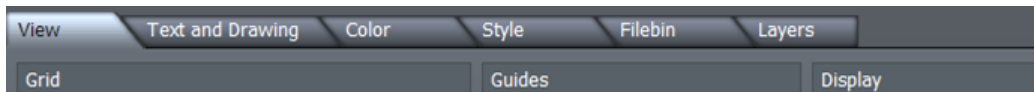
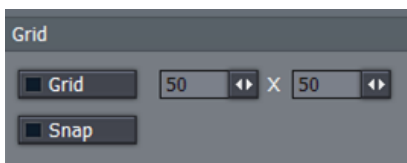


Figure 188

The **View** tab reveals three sections, **Grid**, **Guides** and **Display**. These all add one or another type of overlay to the **Canvas** above, as an aid to composing your graphic and text pages on. As you would expect, none of the overlay elements appear in the final output.

GRID



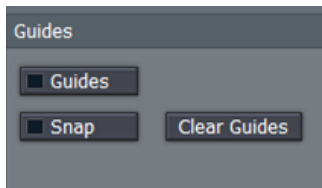
Define a grid to help you align objects on the **Canvas** in specific arrangements.

The two numeric entry fields with associated mini-sliders adjust the width and height of cells in the grid.

Figure 189

The **Grid** switch toggles the grid overlay on/off. Enabling **Snap** effectively makes the lines of the grid *somewhat* magnetic - you are not restricted to placing items exclusively along the grid lines, but the cursor is drawn toward them, making it easy to do so if you wish.

GUIDES



This feature is somewhat similar, in that it offers overlaid lines and a similar Snap feature. However, rather than displaying a full grid, you define where the lines will go – add just one guide line, or as many as you like.

Figure 190

To add a Guide, **Rulers** must be enabled in the Display section. Click in the calibrated ruler display, (horizontal or vertical), and drag the cursor across the Canvas. Release the mouse button when the new Guide is positioned where you want it to go. If you hover the cursor above a Guide, it becomes a double-headed arrow that you can drag change the Guide's position.

Use **Clear Guides** to remove all existing Guides from the screen.

DISPLAY



Traditional television displays usually crop the image area of video somewhat. For this reason, it's customary to allow a certain amount of 'safe area' on the margins of the screen – to make sure that important text displays or action are not inadvertently cut off for viewers.

Figure 191

The **Safe Area** switch in the **Display** pane overlays two bounding boxes on the Canvas. These lines make it easy for you to create your title pages with these 'overscan' limitations in mind. The inner rectangle outlines the Text Safe area, while the outer one is considered Action Safe.

For very complex pages, it can be useful to enable the **Wireframe** switch. While enabled, this removes opaque color from objects on the Canvas window, leaving only an outline through which other items can be seen.

Finally, the **Rulers** option provides another level of precision when preparing your title pages by adding calibrated scales to the display. (And, as noted a moment ago, you add Guides to the work area using the Rulers.)

9.5.2 TEXT AND DRAWING

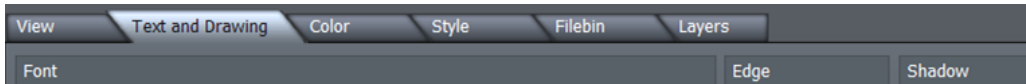


Figure 192

This tab provides primary control over all text and graphic object attributes.

FONT AND ORIENTATION

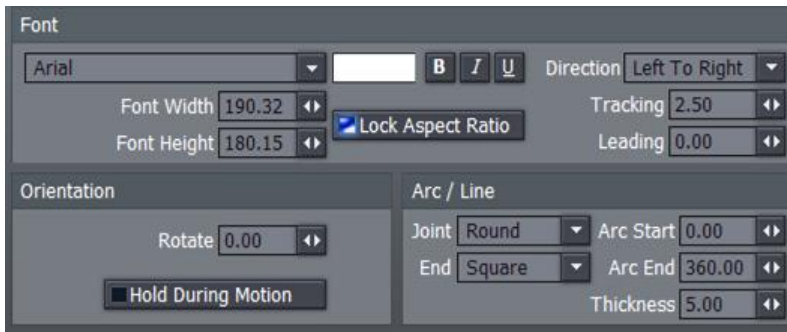


Figure 193

FONT

The drop-down **Font** menu allows you to choose from your installed typefaces. **Bold**, **Italic**, and **Underline** buttons are to its right, along with another *basic* face color well.

The **Width** and **Height** controls are locked proportionally when the neighboring **Lock Aspect Ratio** control is lit up. **Rotate** adjusts the exact degree of rotation (on the Z axis.)

Tracking adjusts the amount of space between neighboring pairs of letters.

Hint: You can also adjust tracking interactively in the Canvas. Place the cursor between letters and, while holding down the Alt key, use the arrow keys to add or reduce spacing.

Leading adjusts the amount of vertical space between text lines. Multi-select the lines you wish to adjust using Ctrl + click (or by dragging a rectangle around them in the preview window), and raise or lower the Leading value to suit your need.

ORIENTATION

Rotate changes the orientation of text and drawing objects. **Hold During Motion**, when enabled, ensures that the selected object does not move as an element within **Scroll** or **Crawl** pages. **Do Not Render** prevents the image from being displayed as part of the page when displayed or rendered.

ARC/LINE

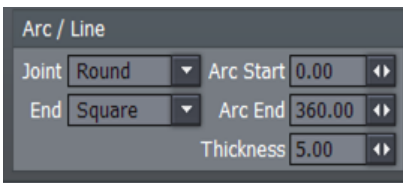


Figure 194

The **Joint** menu options affect way corners of a drawn CG object are created – choose from **Round**, **Bevel**, or **Square**.

Similarly, the **End** menu selection determines whether the ends of a line object terminate in a **Square**, **Round**, or **Point**.

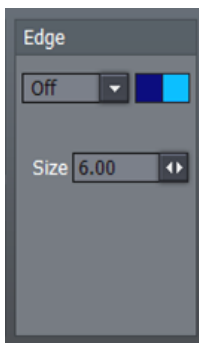


Figure 195

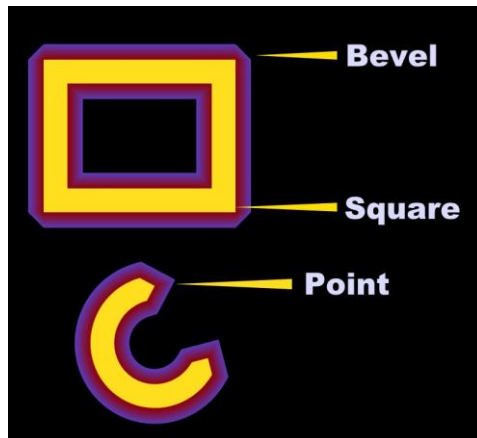


Figure 196

Arc Start and **End** values permit great precision for **Arc** and **Filled Arc** objects, and the **Thickness** value is pretty much self-explanatory.

EDGE

Edge refers to a two-tone border that conforms to character or object shape. The way corners are painted is controlled by the drop-down menu – options are **Round**, **Square**, or **Bevel**.

The two boxes to the right of the menu are where you choose the colors for the inside and outside edges of the border applied around your objects. Inside color is the box on the left, outside color is on the right.

Click in the box to bring up the **Color Picker** panel or right-click in the box to activate the **Eyedropper** tool to easily copy an existing color from the work area.

SHADOW



Shadow options include **Cast**, **Drop**, and **Soft** (the numeric **Soft** setting is only relevant to the latter.)

The **Italic** setting permits you to shear the Shadow independent of the ‘shadow-casting’ object, and the **X** and **Y** fields control the amount of offset for the shadow.

Figure 197

9.5.3 THE COLOR TAB

The **Color** tab provides the control over characteristics for coloring and texturing objects, including text.

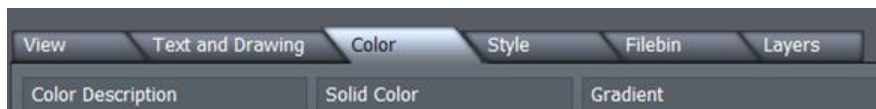


Figure 198

COLOR DESCRIPTION

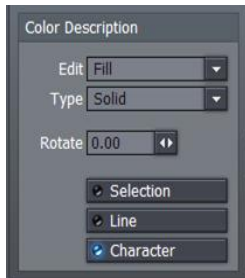


Figure 199

Use the **Edit** menu to specify which aspect of a text line or graphic object you intend to modify.

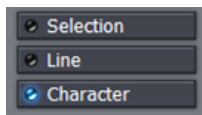
There are three choices: **Fill** controls colors used in the body of the font or object. Choosing **Edge** or **Shadow** instead allows you to modify the corresponding characteristic.

Type permits you to choose between six different types of color (or image-based texture):

- **Solid** – applies a single color to the surface (the one in the neighboring **Solid Color** pane).
- When you pick one of the middle four instead (**Linear**, **Corners**, **Angle**, or **Radial**), the current **Gradient** colors are applied:
 - **Linear** applies the gradient in a straight left-to-right pattern.
 - **Corners** will apply the gradient color starting at the upper left corner diagonally, sweeping around to the bottom right.
 - **Angle** applies the gradient starting at 3 o'clock and rotating counterclockwise.
 - **Radial** applies the Gradient starting at the center of the surface and emanating to the edge.
- **Texture** applies an image map (specified using the **Image** drop-down menu in the **Solid Color** Pane at right) to the surface.

Adjusting the **Rotate** value changes the application angle for the gradient or texture, when active.

SELECTION, LINE & CHARACTER



If you have multiple lines of text on a page, you can choose how the color, gradient, or texture will be applied.

Figure 200

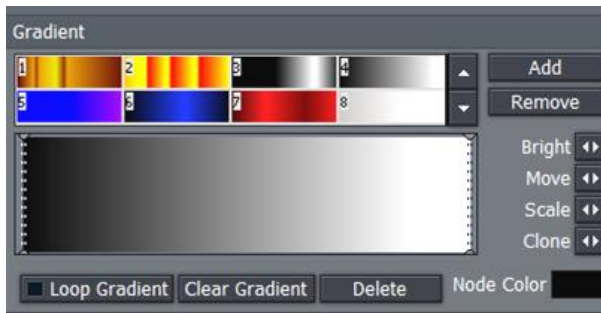
Selection fits your settings to selected characters or objects (including multiple selections.) **Line** applies them independently to a line of text, while **Character** applies the texture independently to each character.

Note: In reality, each text line is always a separate object. If you select just part of a text line (in the Canvas while in T(Text) mode (whether by dragging the mouse or using Shift with the arrows keys), and apply different settings, the line will split into two objects to accommodate your wishes. You may want to use the Group function to permit you to continue treating the line as a single object subsequently.

THE GRADIENT PANEL

Gradients are blended ranges of color that can be applied instead of a single solid one.

GRADIENT PRESETS



The upper section of the **Gradient Panel** contains a goodly number of presets, represented visually.

Scroll through the selections using the arrow buttons at right, and simply click a gradient you like to activate it (replacing the content of the gradient edit pane below.)

Figure 201

Use **Add** to send the current gradient to the presets list, or **Remove** to clear a preset.

The dotted vertical lines in the gradient preview pane mark the nodes of specific color values that define the gradient. You can drag these left or right interactively, or select one by clicking directly on it, and **Move** it using the mini-slider control at right. The display updates immediately to show the results of the changes you make.

Add a new node by double-clicking in the gradient preview. Delete a selected node using the **Delete** button, and set its color using the **Node Color** well. You can also separately adjust the **Bright(ness)** of nodes using the mini-slider at right.

To multi-select nodes for certain operations, you can click them one at a time with the Ctrl key depressed or drag out a marquee around them right in the editor (a shaded box shows the selection zone in this case.) With one or more nodes selected, each time you drag the **Clone** slider, another set of duplicate nodes is created. You can also clone one or more nodes by holding down Ctrl and dragging left or right in the gradient preview pane. **Scale** expands or contracts the distance between multi-selected nodes.

Clear Gradient lets you start fresh, while **Loop Gradient** allows the gradient to repeat itself, so that the color at one end loops seamlessly to the opposite end (this control has no effect when nodes exist at each end of the gradient.)

9.5.4 THE STYLE TAB



Figure 202

The **Style** tab allows you to add gorgeous and complex treatments to your text and graphic objects with a single click. It is also a great way to ensure consistency for the title slates you use in your productions!

To apply a Style preset, simply select a line of text or an object in the Canvas, and then click a representative thumbnail in the Styles pane. Create your own custom look, and add it to the Styles list using **Add**, and of course, remove those you don't care for using **Delete**.

9.5.5 THE FILEBIN

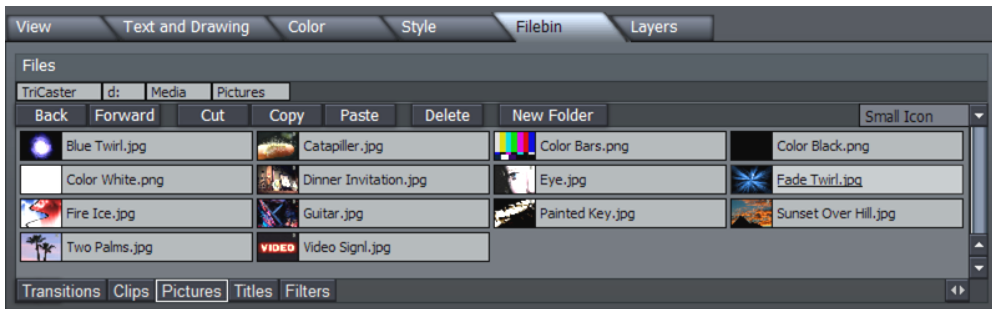


Figure 203

Above the file window is a menu with navigation and file management buttons at left, and a file icon preference menu at right (this menu gives you numerous optional views of your files)

You can simply drag image or .CG file icons right onto the **Canvas** directly from this **Filebin**. (Loading a .cg file in this fashion replaces the current project.)

IMPORT TEXT

If you drag an (ASCII) file onto the Canvas in similar fashion, the **Import Text** panel pops up.

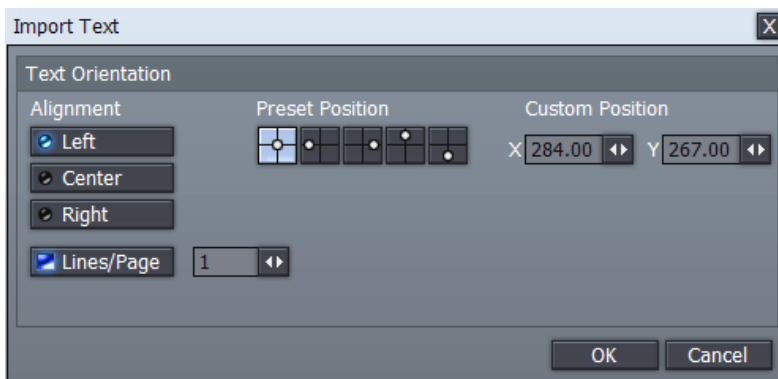


Figure 204

This panel offers numerous controls over the manner in which the lines of text in the file are treated on import, and how multiple pages will be generated as necessary for them. You can create a new page for each line of text, or form a single long page containing multiple lines. As well, you can control placement of the text on the newly created page(s) using the **Alignment**, **Preset** or **Custom Position** buttons.

9.5.6 THE LAYERS TAB

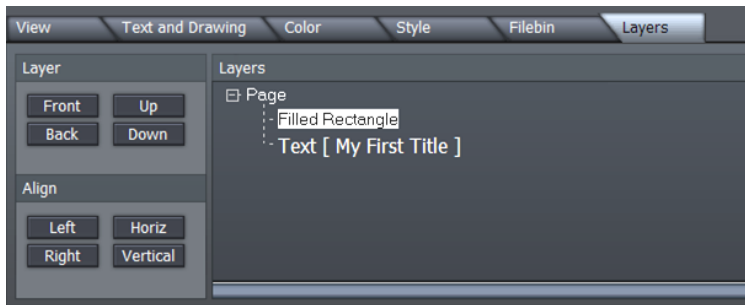
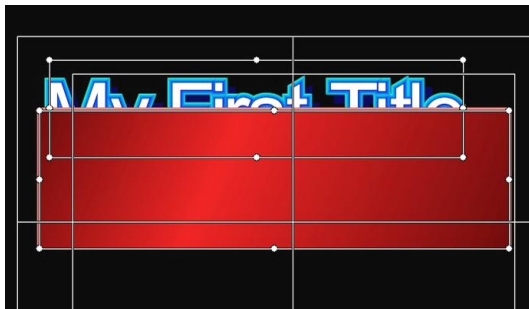


Figure 205

The **Layers** pane provides a convenient way to modify the depth of various text and drawing objects on the **Canvas**, as well as align objects relative to one another.



At times the **Canvas** can be cluttered, making it tricky to select objects directly.

The final tabbed pane provides a convenient alternative. Each item in your current page is represented by an individual line in the **Layers** panel.

Figure 206

Consider Figure 206Figure 208, which shows a line of text that is unfortunately occluded by a rectangle object. Re-ordering these layers is a simple matter in the **Layers** panel.

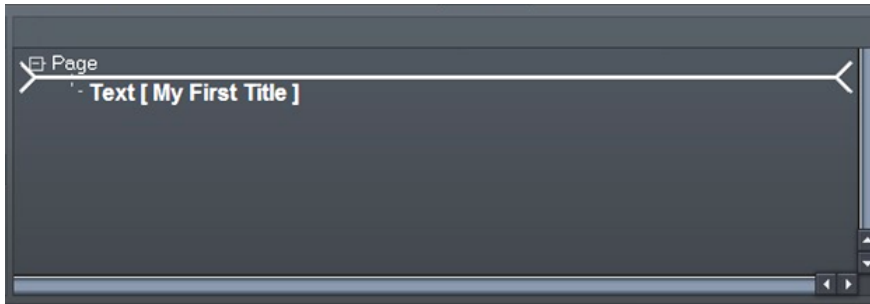


Figure 207

Simply drag the line for the rectangle above the text line with the mouse. The insertion point where the current selection will be dropped when you release the mouse is shown by a thick white line.

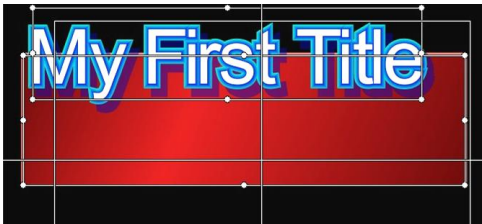


Figure 208

Objects nearest the top of the list will appear further back in the result – appearing behind objects that appear lower down in the Layers list. Multi-select objects by dragging a box around them in the **Canvas** window, then click a button in the **Align** section to line them up.

Hint: The last object selected will be brightly highlighted in the Layer panel, and will also be the one that other objects align to.

9.6 OPTIONS AND KEYBOARD CONTROL

An extensive list of **Keyboard Shortcuts** is available for **Text Edit** (for example, pressing Alt + F2 toggles the **Safe Area** overlay in the **Canvas** on and off.) See Appendix E, Keystroke Shortcuts.

10 LIVEMATTE, LIVESET, ACTION



This chapter discusses some of TriCaster's most interesting and useful features, LiveMatte and LiveSet.

Combined, these two features allow you to create productions that you can display with great pride. These cutting edge capabilities mean your presentations can look as good as it gets, but without a truckload of prohibitively expensive gear.

We introduced **LiveMatte**, TriCaster's wonderful realtime chromakeying feature, way back in Section 5.2.6. That section revealed that LiveMatte was an important component of the NewTek's revolutionary LiveSet system. **LiveSet** extends mundane chromakeying analogy in wonderful ways.

A good realtime chromakey system (like **LiveMatte**) can seamlessly substitute a new 2D background behind the keyed foreground – typically a 'weatherman' or new commentator – but as you know, times move on.

In high-end broadcast environments these days, the (very expensive) must-have technology is the "virtual set." News anchors address us from lavish sets, with busy backgrounds composed of gorgeous architecture and moving video displays, along with beautiful desks and furnishings in the foreground -- all computer-generated.

TriCaster brings virtual set technology to the masses, with **LiveSet**. This astounding feature provides not just a background, nor even just a foreground – but along with both of those, it adds supplemental moving video displays, realistic reflections and shadows, and to top it off, supports multiple shots. Cut between angles, and even fade or perform 3D transitions between shots.

More than this, you can just as easily live switch segments played from TriCaster's DDRs, switching between live talent and pre-recorded segments, all in the same virtual environment. Alternatively, assign DDR module output to over-the shoulder displays, or show it on 'virtual screens' in your 'virtual set!'

Did we mention this was all done, not 'in post', but *live*?? And it all begins with LiveMatte.

10.1 LIVEMATTE

Really, **LiveMatte** is the only part of this that requires much of you, the TriCaster user; and even this bit is quite simple. Please refer back to Sections 5.2.6 and 6.7 for guidance on using the LiveMatte controls.

LiveMatte is an excellent keyer. Even so, it's crucial to start with good planning and physical preparation (if you're thinking, 'I know – garbage in, garbage out', you're very astute).

10.1.1 PRACTICAL STAGING FOR LIVEMATTE

We'd like to offer a few suggestions here to guide you in preparing, so you get the most out of LiveMatte and LiveSet.

LIGHTING

The single most important aspect of 'pulling a clean key' is lighting. The lighting should be even and diffuse. Hotspots and shadows create different green or blue shades on the wall, and overexposed areas lack sufficient color for clean keying. (It is not how *much* light you have on the key wall, but how *evenly lit* that wall is!) Naturally, you want to keep your green (or blue) screen clean and free of wrinkles, ripples, folds, tears, or other blemishes, as well.

Second, the distance from your talent to the screen behind can make a profound difference in key quality.

When the subject stands too close to the key colored background, the key color reflects back onto the subject, creating an 'edge' that is difficult to remove. If you have available space, move your subject farther away from the wall.

When good distance is out of the question, you can improve things somewhat by placing lights above and behind the talent, lighting them from behind with a complimentary color filter over the light to 'cancel out' unwanted reflection (for green use a magenta filter; for blue, orange or amber. Don't overdo back (or top) lighting, however. The limited dynamic range of the camera means there will be little useful color data in badly over-exposed highlights. This can make it next to impossible to separate fringe zones (such as hair detail) from the background (especially when this is also overexposed!)

Analog Connections

As mentioned above, washed-out areas in the video signal lack sufficient color information to provide good separation. For similar reasons, it's worth considering the color characteristics different types of video signals.

In the analog video realm, you will encounter three main types of camera feed. We present them here in ascending order of the quality of video signal they provide (and as things go, in the reverse order of their cost, and the likelihood that you will have access to them):

Composite – a two conductor design using the classic RCA connector (also referred to as a phono connector or CINCH/AV connector)

Y/C – typically using a round, 4-pin mini-DIN connector or two BNC connectors, Y/C keeps Y (luminance) and C (chrominance) signals separate.

Hint: Y/C is occasionally called “component” (which while technically correct, can be a bit confusing given the name of the next class), S-Video (legitimate) or “S-VHS” (completely incorrect, though a common error.)

Component (a.k.a. ‘YUV’) – a three wire system typically using BNC (push & twist-on) connectors. This format uses a little math to cleverly juggle the RGB values computers favor into something less ‘bulky,’ in the interest of making best use of precious analog signal bandwidth.

Cameras and connection from either of the last two is to be preferred, but it is entirely possible to succeed with only a composite signal. When you have better available, however, use it! (Try to avoid downgrading the pre-LiveMatte signal from a Y/C camera, for example, by connecting it to your TriCaster using composite cabling.)

Hint: MiniDV cameras are not available in the Input Setup panel as live switching sources, for several reasons. However they may often be connected by Y/C cable, and in this configuration may actually provide a better color rendition for keying purpose than if they were connected by IEEE1394 cable.

CALIBRATION AND MONITORING

Obviously, it is more than a pun to state that good color rendition is *key* for LiveMatte. TriCaster provides convenient signal calibration tools in the **Input Setup** panel. Feed color bars from your camera(s) to the assigned Input(s), and calibrate them before beginning.

As well, a (properly calibrated) commercial quality broadcast monitor can be a big help when judging lighting and the effect of **Proc Amp** control settings.

10.2 LIVESET

(If your TriCaster features LiveSet, continue reading here for specific details and tips.)

- Connect a camera, arrange your greenscreen, lighting and talent as just discussed.
- Use the **LiveMatte** section to set up a clean preliminary key, and you're ready to try your hand at gorgeous realtime LiveSet effects.

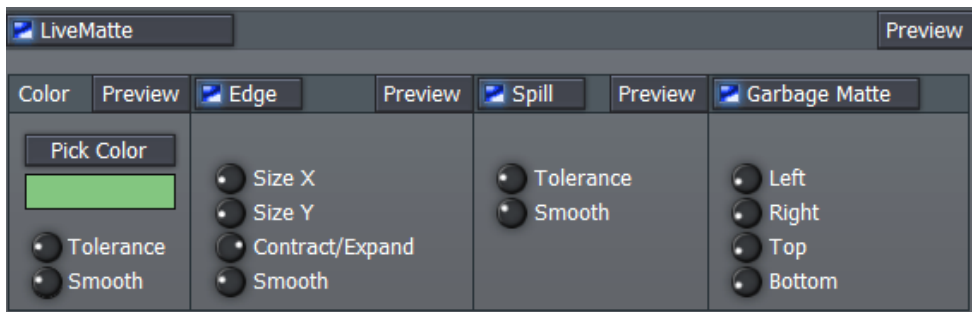


Figure 209

10.2.1 EASY AS 1-2-3

LiveSet is as easy as 1-2-3. Don't believe me? It's true -- follow along and see for yourself.

Hint: just a reminder -- for ideal results use the best source and connection available for this part.



Figure 210

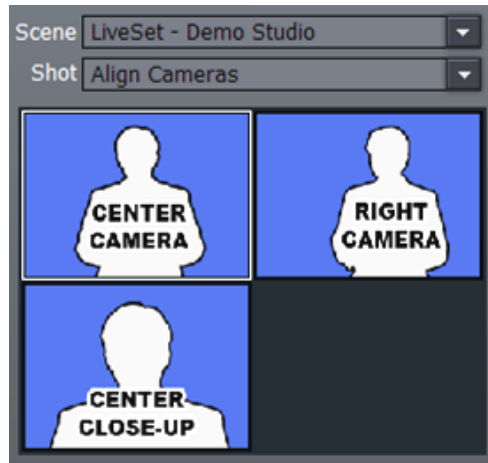


Figure 211

Select the camera on the Switcher's **Live** (or **Preview**, if working in a live setting) row *and* the **Input Setup** panel's **Source** menu.



Figure 212

Choose a **LiveSet** in **Effects**, **Align Cameras** for the **Shot**, and click any quadrant below.

Then direct your talent into position using the white profile overlaid on the appropriate Output monitor - LIVE or PREVIEW - as guide.



Figure 213

Select a camera angle from the **Shot** menu (Figure 213), and voila! Is that cool or what? Check out the reflections on the desk and floor, and shadows behind. Amazing, isn't it?



Figure 214

Notice that in our result, a second (full motion) video source is displayed on the virtual LCD panel at left, above our virtual anchor desk.

This secondary source is drawn from the **Effects Row** of the **Switcher**. You can use live video from a camera, or one of TriCaster's DDR modules.

10.2.2 MULTI-CAM LIVESET

No doubt you'll think of countless applications where **LiveSet** can make you shine like the pro you are. Now that you're making money 'hand over fist' with TriCaster and LiveSet, you'll be able to equip yourself with decent equipment, including more (and better?) cameras.

Hook up your cameras, and use **LiveSet** and the **Input Setup** panel to configure the different camera angles and distances. Switch back and forth using the standard Switcher conventions, for flawless straight cuts or elaborate 3D transitions.

Hint: don't forget to calibrate each camera, as mentioned earlier, so there is no change in color as you switch views!



Figure 215

Remember too, that all of TriCaster's other features remain at your service. For example, in Figure 215, we see our anchor desk with the addition of one of TriCaster's great-looking text templates masking the whole thing courtesy of the Overlay panel.

It's *almost* too much. 😊

10.2.3 CREATING YOUR OWN LIVESETS

Your system ships with a number of sample **LiveSets**, quite possibly some you will be able to use immediately for your own purposes. Many, however, will surely want to take full creative advantage of this powerful and versatile feature. **LiveSet** technology permits a dizzying array of possibilities and applications. A series of custom LiveSet creation applications and plug-ins ranging in power and accessibility from 'easy as pie' to 'don't try this at home, kiddies!' have been and released.

*Hint: Updates and additions are announced and made available via the NewTek website, www.newtek.com, especially through your personal **Product Downloads** page there. Relevant documentation accompanies each tool.*

In some cases, LiveSet creation can be almost as simple as choosing two images – one for the foreground, and another for the background. More advance LiveSet features require some knowledge of the creative tools involved (such as NewTek’s renowned Lightwave3D.)

There is one other type of LiveSet to mention in this context, though.

LIVESET FOR TITLES AND CG

LiveSet effects don’t really *have* to be virtual sets, as we have seen. Another useful application is a simple title/CG overlay in LiveSet’s foreground channel, with your live video appearing behind it

This could serve as a secondary ‘upstream’ overlay channel (ahead of the main ‘downstream’ Overlay on the final program stream.) It could be used, for example, to apply an ever-present station identifier graphic (“bug”) - leaving your Overlay module free for more other live titling needs.

As mentioned earlier when discussing the **Edit Text** features in LIVE Production, you can easily create one or more LiveSet CG overlays to fill this need with the click of a button.

11 ADMINISTRATION



TriCaster has several operating modes and options, allowing you to (for example) work with traditional 4:3 or widescreen 16:9 video, and so on.

Access to the options, along with a number of maintenance and convenience features is provided by the Administration Desktop.

This chapter covers the options and utilities available there, and will also help you to keep your TriCaster system up to date.

Your TriCaster system is a remarkably sturdy and reliable device. There are a few things you can do to ensure it always operates at peak performance.

11.1 THE ADMINISTRATION PANEL

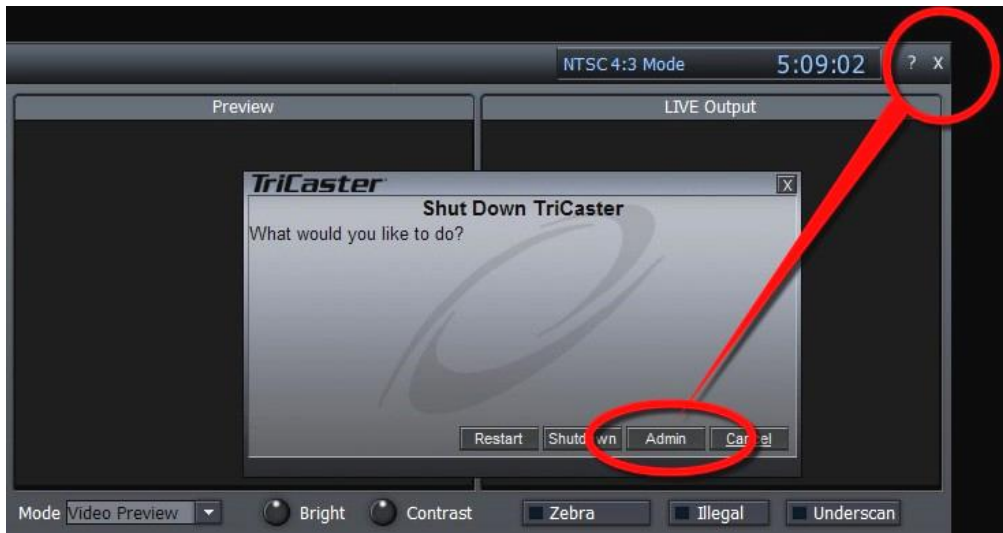


Figure 216

When you click the small [x] button in the upper-right corner of the screen, the **Shut Down** dialog appears, providing several options:

- **Restart** will exit and re-launch the system, after closing all modules.
- **Shutdown** powers the system off.
- **Admin** closes the TriCaster interface, and takes you to the Windows™ desktop. A special **Administration Panel** displayed here provides access to a number of useful maintenance functions.



Figure 217 - TriCaster STUDIO

Note: The Administration Panel varies slightly for various TriCaster TCSD models.

11.1.1 RESET CONFIGURATIONS

Many aspects of your TriCaster interface – the playlist contents in the DDR, LiveSet assignments in Input Setup, title projects in Edit Text, etc. – are saved from one session to the next in the Configuration file.



Figure 218

However, an inadvertent error condition arising during a session may cause problems when you attempt to launch the TriCaster. By clicking the **Reset Configuration** link, you restore the factory default settings for all modules. This is generally sufficient to restore normal functionality.

Note: files that you have saved from various TriCaster modules (such as saved Edit Media projects, exported Playlists and the like) are not affected, and can be manually reloaded after a Reset Configurations operation.

11.1.2 DEFRAGMENT HARD-DRIVE



Figure 219

It is the nature of hard drive storage for performance to gradually deteriorate over extended periods, particularly with frequent saving and deletion of large files (such as captured video files.) In time, it is possible for some stuttering to occur when you play stored video files. Defragmenting re-arranges the files on the hard drive to restore optimal playback.

11.1.3 CHECK FOR ADD-ONS



Figure 220

When TriCaster is connected to the Internet, clicking this link takes you to the NewTek website to see what additional items related to your TriCaster may have become available.

11.1.4 SOFTWARE UPDATE



Figure 221

NewTek periodically provides new versions of the software. Clicking **Check For Software Updates** will check to see if you have the most recent release installed (an Internet connection is required).

11.1.5 TECHNICAL SUPPORT



Figure 222

NewTek's legendary Tech Support is only a click away if you have questions or concerns (internet connection required).

11.1.6 LAUNCH TRICASTER



Click here to re-launch your TriCaster software after visiting the Administration Panel.

11.1.7 CONFIGURE TRICASTER



Figure 223

Click this to open the **TriCaster Configuration Options** dialog shown in Figure 224.

Note: The options shown in this dialog vary depending on your TriCaster model.

Your selections here determine the configuration your TriCaster adopts the next time you launch it (using the nearby **Launch TriCaster** link on the **Administration Panel**.)

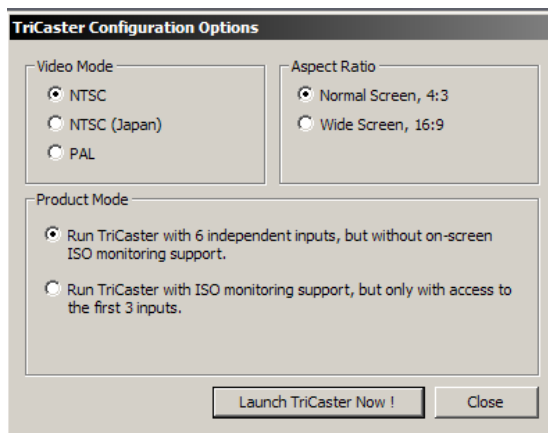


Figure 224

One section of the panel allows you to choose between 4:3 and 16:9 image aspect ratios.

Multi-standard models also offer optional video standard options: NTSC, NTSC-J, or PAL.

Both TriCaster Studio and BROADCAST models also display the optional 3-Camera or 6-Camera Operating Mode switches.

Note: See Section 6.12, Configure Panel (BROADCAST) for details on additional configuration options specific to that model.

11.2 SYSTEM RESTORE

We firmly expect you will never need it, but isn't it good to know that a complete System Restore function is available in the event of a failure you cannot resolve?

When you first power up your TriCaster system, it automatically performs various diagnostic tests, then launches Windows™ and your TriCaster software. To access the System Restore feature, press F8 (you may need to do so a few times in quick succession, say once per second) immediately after powering up and before Windows launches. This will present you with a black screen with menu items including "Safe Mode" and "Return to OS choices menu." Choose the latter option, and then select "Restore" from the next screen.

Choosing this option will completely restore your system drive ("C") to 'as-shipped' content. This goes well beyond what **Reset Configurations**, mentioned above, is capable of. Note that any additional content you may have added after your system was new, including any TriCaster updates, will be over written – so use this function only if you truly find it necessary (a call to NewTek's excellent Tech Support first may often be fruitful.) You will be asked to supply your Windows™ license number – you can locate this information on a sticker affixed to TriCaster.

11.2.1 LIMITING USER ACCESS

In facilities where there are numerous users, Administrators can disable access to all of these utilities by renaming two files. Once accomplished, the Admin button is replaced upon exit with Logoff, which will return users to the Logon screen. The file in question is:

`C:\TriCaster\Skins\BlackBoxDesktop\Default\Normal\Initialization.ToasterScript`

Rename this file (i.e., adding an .OLD to the end of the filename). Now, in the same folder, remove the 'SAFE' on the file SAFEInitialization.ToasterScript. By doing this, you have prevented unauthorized users from seeing anything except the TriCaster interface. (While TriCaster is running, Windows hotkeys for Explorer, minimize, etc are disabled.) Administrators may exit to the Desktop at any time by pressing Ctrl+Alt+e.

11.2.2 TRICASTER FILE EXTENSIONS

TriCaster is capable of reading many common graphic and file formats. TriCaster also creates and manipulates several different file types, for internal databases:

- .vto — TriCaster Overlay Playlist
- .vtv — TriCaster DDR Playlist
- .vtp — TriCaster Video Project

11.2.3 DEFAULT FOLDERS

While you can create your own folders on the D: partition, TriCaster stores files in the following structure:

FOLDER PATH

Effects

- C:\TriCaster\Effects
- C:\TriCaster\Effects\Transitions
- C:\TriCaster\Effects\Filters
- C:\TriCaster\Effects\Solid Colors
- C:\TriCaster\Effects\Titles
- C:\TriCaster\Effects\Titles\Templates

Clips

- D:\Media\Clips

Projects

- D:\Media\Edit Projects

Pictures

- D:\Media\Pictures

Playlists

- D:\Media\Playlists

Streams

- D:\Media\Streams

PART III (APPENDICES)

A time-saving question and answer section, followed by an extensive listing of Shortcut Keys, schematic diagram and keyword index ...

A HOW DO I ... ?



In this section, we'll consider the most common questions TriCaster operators may have (and of course we'll provide the answer, too).

The answers are intentionally brief – perhaps just a reminder of one or two steps required to perform some operation. For this reason, we'll also point you to explanatory information elsewhere in this manual whenever that would be useful.

If you've largely mastered your TriCaster but have a specific question, this may be the best place to look first. The headings that follow list related questions and answers together, along with cross-references and other helpful remarks.

Hint: The NewTek website includes a comprehensive FAQ database containing a wealth of useful information on all of its products – please see <http://www.newtek.com/faq/>

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A.1 CONNECTIONS

A.1.1 CONNECT CAMERAS?

1. Connect video sources to the appropriately labeled input connectors on TriCaster's faceplate according to your camera's video output connection type (see Section 4.4).
2. Launch TriCaster's **Live Production** desktop (if necessary).
3. Choose an appropriate **Type** for each **Input** in the **Input Settings** tab (see Sections 4.4 and 6.6).

A.1.2 CONNECT A MONITOR?

With the power off, connect an external computer monitor to a DVI port on TriCaster's backplate, using an adapter if necessary.

A.1.3 CONNECT A PROJECTOR?

TriCaster secondary output connector is used by the **VGA Output** feature. (This output can serve as a supplementary program output for projection, or for operational monitoring purposes – see Section 6.9.5).

1. With TriCaster powered down, connect the external device to the secondary output on the backplate using an appropriate cable (and/or adapter, if required).
2. Power up TriCaster.
3. Launch the **Live Production** desktop (if necessary), and click the **External** tab.
4. Set **Resolution** in the **Output to VGA** section of the tabbed pane to match the native resolution of the external device.

Note: Changing Output Resolution can cause frames to be dropped briefly. Changing this setting during live production is not recommended.

A.1.4 CONNECT TELEVISION MONITORS?

Connect cables between downstream devices (whether monitors or other devices) and appropriately labeled connectors in the Video Out group on TriCaster's faceplate (see Section 4.4.1).

Downstream video monitors must be compatible with the video broadcast standard (such as NTSC or PAL) your TriCaster is configured to output.

A.1.5 GET TRICASTER'S ADDITIONAL VIDEO OUTPUTS TO WORK?

TriCaster has one DVI port for the user interface, and a second for 'VGA' output. Additional video outputs on the motherboard are non-functional, and are capped off when TriCaster is shipped.

A.1.6 CONNECT A SUPPORTED EXTERNAL CONTROL SURFACE?

Connect the USB cable from the Control Surface to one of TriCaster's USB ports.

A.1.7 CONNECT AN EXTERNAL HARD DRIVE?

Connect a suitable USB cable from the external hard drive to one of TriCaster's USB2.0 ports. Note that the hard drive should probably be formatted using the NTFS file system (the FAT file system chokes on exported files exceeding 4 Gigabytes, as will often be the case).

A.1.8 GET MY LACIE™ HARD DRIVE TO WORK?

Recognition issues involving LaCie hard drives and TriCaster have been reported. If this occurs, make sure the hard drive is seen in My Computer (exit to Admin). If it is detected, make sure the file system for the drive is NTFS.

(It is recommended that you use a Windows-based external drive such a Western Digital, Seagate or Maxtor for ease of use).

A.1.9 CONNECT TALLY LIGHTS?

External tally light devices and their connections vary widely. Please refer to Section 4.6 for details on TriCaster's tally light jack implementation.

A.1.10 CONNECT TO A NETWORK?

Please refer to Section 4.7.

A.1.11 HEAR SOUND FROM WINDOWS APPLICATIONS?

If necessary, the integrated motherboard audio can be used for output from Windows™ or third-party applications running (Note, installing third-part applications is not recommended, as they very likely may compromise TriCaster performance). You will find a 3.5mm green stereo output on TriCaster's backplate that can be used to connect computer speakers or head phones.

A.1.12 ENABLE TERMINATION FOR VIDEO INPUTS?

TriCaster has full-time video termination. If you need to loop through (or t-off from) other video devices (such as an external monitor) prior to TriCaster in your video pipeline, you should ensure termination is OFF for earlier devices.

A.1.13 PROTECT TRICASTER FROM MALWARE ON USB THUMB DRIVES?

Hold down the Shift key when inserting the device in TriCaster. This tells TriCaster not to *Autorun* the device. It is usually when the inserted device is being scanned for executable files that infected files copy themselves to the new system.

11.3 iVGA

A.1.14 LOCATE THE TRICASTER iVGA CLIENT APPLICATION?

There is a copy of the iVGA client application on your TriCaster in the C:\TriCaster\TriCaster iVGA folder. Also, you can download the most recent versions of the iVGA client from the Downloads page in your personal Registration area on the NewTek website.

A.1.15 RESOLVE iVGA CONNECTION PROBLEMS?

A number of things can interfere with iVGA's network communication. Check the following possibilities if you have problems connecting:

- Make sure the iVGA client is running in the external computer's task tray.
- Make sure the external computer is connected to TriCaster with Ethernet or cross-over cable.
- Make sure the external computer has a computer name of 15 characters or less.
- There is no need to disable the Windows firewall, but you may need to allow iVGA past apps like Zone Alarm™. Free use of TCP Ports 5901 and 5902, as well as UDP Port 5901, is required for iVGA operation. Take appropriate steps to ensure any firewall you employ does not block these ports.
- If you're on different workgroups, you'll have to ping or copy a file across in Windows Explorer before it will be seen.
- If you are running an nVidia™ card on the client computer, make sure the nVidia "Network Traffic Manager" software is disabled.

A.1.16 IMPROVE iVGA SHARPNESS?

The iVGA signal can look 'soft' due to "*down-scaling*" when iVGA scales a high resolution screen down to a standard definition video signal. Small fonts can become illegible when downscaling is drastic. Keep this matter in mind when creating presentations or graphics for use with iVGA.

To improve both the quality and framerate for iVGA, consider lowering your external computer's desktop resolution. This will in turn make everything appear larger, and TriCaster will not have to scale down as much. (To do this, go to **Control Panel | Display | Settings**, and then change the **Screen Resolution** to something suitably low – perhaps 1024x768 (or even 800x600).

A.1.17 SHOW THE LIVE PRODUCTION DESKTOP ON VGA OUTPUT?

TriCaster's VGA Output bypasses the video resolution scan-converter to send a high resolution display to a projector. You can send TriCaster's own Live Desktop to the projector (without having to clone displays), as follows:

1. Exit TriCaster to the Administration Desktop.
2. Hold down Shift, and click on the Launch TriCaster link on the Desktop (this allows you to task-swap between Windows applications).
3. Press windows-d key to minimize TriCaster and reveal the Windows desktop.
4. Navigate to C:\TriCaster\TriCaster iVGA\ and launch NewTek iVGA.exe .
5. Now, press Alt + tab to return to TriCaster, and you will see on the VGA tab that your own interface is available for projection output.
6. (You can then display the interface and change Input Sources on the VGA tab to also show the external laptop's PowerPoint display.)

A.2 LIVE PRODUCTION

A.2.1 SYNCHRONIZE TRICASTER'S AUDIO AND VIDEO OUTPUT

As for any device, a slight (2-3 frame) delay occurs when audio and video signals pass through TriCaster (this is referred to a 'latency'). The actual transit time for audio and video is identical, so as long as the signals were synchronized at TriCaster's inputs, they are synchronized on live output.

(If the audio is *not* routed through TriCaster, it may lead the video signal slightly. To maintain correct synch in a setting where an outboard audio mixer is in use, consider passing the mixer output through TriCaster to the downstream distribution system.)

A.2.2 IMPROVE LATENCY/AUDIO SYNC?

Latency might be defined as the ‘transit time’ for an a/v stream. Each device in the video chain introduces some limited (transmission) delay. TriCaster’s latency is very minimal (as little as 1.5 frames), but you can take measures to keep it to a minimum – first and foremost, by genlocking your video devices – see Sections 4.5.1 and 6.12.2.

In a *seemingly* related matter, note that audio and video passing through TriCaster are always synchronized. However, aspects of the physical design for IMAG (video projection) installations can make mimic a sync issue for viewers at some locations in the auditorium. These issues are discussed in detail in Section C.3, IMAG and Latency.

A.2.3 CHANGE PLAYBACK SPEED FOR CLIPS IN THE DDR?

To adjust the DDR’s playback speed, click the small ‘LEDs’ to the left or right of center beneath the knurled Jog wheel.

A.2.4 GET STUBBORN CLIPS (MOV OR AVI) TO PLAY IN THE DDR?

QUICKTIME™

TriCaster provides internal support for many QuickTime file formats, but not all of them. If a QuickTime file fails to play smoothly (or at all) in the DDR, we recommend converting it to a friendlier format.

Final Cut™ users might consider M-JPEG, DVCPRO, or the DV Quicktime codec as intermediate formats. In some cases you might be successful using EDIT Media to convert QuickTime files that fail in the DDR (SpeedEDIT’s Quicktime codec support is more extensive).

AVI

AVI codecs are plentiful. Most are suitable for DDR playback, but a few are not. However, we strongly discourage installing ‘foreign’ codecs, codec packs and the like downloaded from internet sites, etc.

For the sake of stability, if an AVI clip does not play well in the DDR, *please* consider converting it to a ‘friendlier’ format. We can recommend NewTek’s own SpeedHQ, or perhaps DV.

A.2.5 SELECT A RANDOM SWITCHER TRANSITION?

To activate random transition from the current bin, press Alt + /.

A.2.6 FLIP THE VIDEO IMAGE?

Certain studio setups (such as cooking or crafts shows) require flipped video at times. Some cameras provide a switch to flip the image, but this feature introduces a short delay into that camera’s output. Instead, use NewTek LiveSet Utility to flip that video in real-time, without any additional latency.

A.2.7 RUN THIRD-PARTY PROGRAMS ON MY TRICASTER?

Installing third-party applications on a TriCaster is not recommended and will likely cause performance and stability issues. There is also no way the operator can run TriCaster while still maintaining full access to Windows™ at the same time. Further, any applications that capture the screen will degrade TriCaster performance very dramatically.

A.2.8 GET TRICASTER’S TEXT MODULE TO UPDATE MODIFIED TEXT ATTRIBUTES?

TriCaster caches some title page data until the file is removed from the Text module playlist. Remove and then re-add pages to the playlist to refresh them.

A.3 RECORD/CAPTURE

A.3.1 CHANGE THE RECORDING QUALITY?

TriCaster has two optional quality settings for recording live video, **Normal Profile (Compatibility Mode)** and **Studio Profile**. Both of these alternatives record 'I-frame only' MPEG2 files at a rate of approximately 50mbps.

The **Normal** setting produces a 'standard profile' MPEG2 with 4:2:0 encoding, and has best compatibility with third-party products. **Studio** quality files comply with the MPEG2 'high profile' standard, resulting in 4:2:2 encoding at the expense of slightly less cross-product compatibility.

To change the setting:

1. Access the **Record/Stream** tab.
2. Enable or disable the **Use MPEG-2 Studio Profile** switch under **Record Profile**.

A.3.2 RECORD TO AN EXTERNAL HARD DRIVE?

Ideally, it's best to record to TriCaster's internal "D:" drive. If you do use an external drive, be sure to test beforehand for adequate connection speed, and format the external volume using the NTFS file system (off-the-shelf drives are often formatted as FAT32, which will be unable to record longer video clips).

A.3.3 RESOLVE A "DV DEVICE NOT CONNECTED" ERROR?

Exit to the Administrator Desktop, and check that your DV device is being detected – open *My Computer*, and verify that a DV device listed.

If it is, reinstalling the drivers for the IEEE 1394 controller may help. To do this, follow these steps:

1. Right click on **My Computer**, and go to **Manage**.
2. Choose **Device Manager**.
3. Open IEEE 1394 Bus host controllers.
4. Right-click on the controller device listed, and choose **Update Driver**.
5. If Windows asks to connect choose **No, not this time**.

6. Choose to **Install from a list or specific location (Advanced)**.
7. Choose **Don't search. I will choose the driver to install**.
8. Choose the **OHCI Compliant IEEE 1394 Host Controller** driver.
9. Once done, select **Finish**, and restart the system.

A.4 AUDIO

A.4.1 CONFIGURE TRICASTER FOR +4DBU AUDIO?

To configure TriCaster to use an audio source at +4dBu nominal level, go to the **Audio Setup** tab in the **Live Production** desktop, which is where the **Line**, **Mic**, and **Variable** options are found.

Select **Variable Gain**, and turn the knob all the way down. When you supply a +4dBu tone to TriCaster input, it should read "0" on the VU meters.

If you are inputting a -10dBV nominal level, you'll want to select **Line** in the **Setup** tab. A -10dBV signal should then read "0" on the VU meter. You have the option of selecting Variable to make fine adjustments if needed (this is preferable to make adjustments this way, rather than using the audio gain sliders).

Finally, if you are using a MIC input, select the MIC button, and **Phantom Power**, if you are using a powered MIC on the XLR inputs. Phantom power is not applied to the 1/4 inch connectors).

Input impedance for TriCaster's audio jacks is about 10K ohms, and output impedance is about 100 ohms.

A.4.2 CONFIGURE A 'MIX MINUS' AUDIO OUTPUT?

When **Solo** is enabled for any source, TriCaster's **Headphone** output exclusively supplies sound from soloed sources, and can be used as a configurable secondary output (such as the so-called 'mix-minus' configuration).

Enable **Solo** for individual sources you wish to send to **Headphones**. To remove a soloed source from the master mix (but *not* Headphones), enable the **Mute** switch for that source.

A.5 STREAMING

A.5.1 CREATE A CUSTOM STEAMING PROFILE?

TriCaster provides offer a variety of streaming profiles validated to cover most requirements. If you require custom settings, however it is possible to create and employ your own custom streaming profiles.

Begin by downloading the latest TriCaster updates from the download page in your personal Registration area on NewTek's website (to ensure you have the most recent encoder validated for TriCaster installation).

Warning: Manually upgrading the Flash or Windows Media encoders may cause TriCaster streaming to fail!

WINDOWS MEDIA™

Continue as follows:

1. Exit TriCaster to the **Administrator** desktop.
2. Go to (Windows) **Start | All Programs | Windows Media | Utilities | Windows Media Profile Editor**.
3. Load an existing profile and modify it.
 - a. Click **Import**.
 - b. Navigate to the *C:\TriCaster\User Data\Default User\Stream Profiles* folder.
 - c. Select a profile (*.prx file) from the *4x3* or *16x9* folder located inside the *NTSC* or *PAL* folder. (The profile selected should correspond to the format you intend to use it in.)
 - d. Customize the parameters (bit rate, frame rate, resolution, etc.) for the streaming profile you imported as you see fit. (Microsoft's Windows Media Encoder website offers extensive information on the topic.)
 - e. When done customizing the profile, click **Export** under the **General** tab.

- f. Navigate back to the folder you located earlier, and save your custom profile there. The profile name you supply when saving it will now appear in TriCaster's **Stream Type** menu list.

Note: It's possible to create profiles that are not well suited for typical situations, and which may cause TriCaster's output to falter or fail. Test, test, test ...

FLASH™

1. Exit to the **Administrator** desktop
2. Initialize the TriCaster video i/o drivers:
 - a. Go to (Windows) **Start | Run**.
 - b. In the **Open** text entry field, type in **newtekrtime** and press **OK**
 - c. A DOS prompt should pop up and run a few commands. Leave this window open.
3. Run **Flash Media Live Encoder (FMLE)** by going to **Start | All Programs | Adobe | Adobe Flash Media Live Encoder 3**.

(It is normal to get a couple of errors when you launch the program, just click past them.) FMLE allows you to customize settings such as bit rate, frame rate, resolution, etc. (For more information regarding encoding options, please visit Adobe's help website.)

- a. For the custom profile to properly use the audio and video from the TriCaster, make sure the **Device** under the **Video** and **Audio** sections are set to **VT Video Device** and **VT Audio Device** respectively.
 - b. Also set the **Input Size** to **720x480** (NTSC) or **768x576** (PAL). From here you may customize the other settings as you please.
4. After you have finished preparing your profile in FMLE go to **File | Save Profile** and navigate to here: **C:\TriCaster\User Data\ Default User\ Stream Profiles\Flash Profiles**
 - a. Enter the NTSC or the PAL folder as appropriate to your locale, then the 4x3 or 16x9 folder, and save your profile there.

Note: Profile names must begin with "Flash" (character case is important), and may be followed by a brief name or description (compare existing profiles for examples). If the file is not named correctly then it will not be recognized as a Flash Media profile, and will be listed as a Windows Media Encoder profile.

5. When finished, close FMLE and the DOS prompt window (NewTekRTME)
6. Configure your TriCaster to launch with the aspect ratio setting that corresponds to the profile you just made. You should now be able to select and stream through your custom profile under the Record & Stream tab under Live Production.

Note: It's possible to create profiles that are not well suited for typical situations, and which may cause TriCaster's output to falter or fail. Test, test, test ...

A.5.2 STREAM FLASH IN VP6 OR H.264?

An error may occur when you try to push a stream in either VP6 or H.264, resulting in the following error message:

Flash Media Encoder Error

Flash Media Encoder terminated prematurely, please try again.

Try the following steps:

1. Exit the Live Production desktop, and return to the **Admin** screen.
2. In the Windows **Start** menu, launch **Flash Media Live Encoder** (this initializes Flash and creates a new profile).
3. Reboot the system.
4. Return to the Live Production desktop, and push your Flash stream.

A.5.3 CONFIGURE MY ROUTER FOR PORT-FORWARDING?

See Port Forwarding (under Pull Connection issues) in Section 11.7.1.

A.5.4 RESOLVE THE ERROR “PLEASE ENTER VALID STREAM ID”?

Enter a name for the stream in the **Stream ID** field in TriCaster’s **Record/Stream** tab (any name will suffice).

A.5.5 RECORD MY FLASH STREAM WITHOUT CONNECTING TO A SERVER “?”

Attempting to record a Flash live stream without anything in the address window causes an error, causing recording to fail. To write to disk without a *publishing point*, type the following in the **Location** field:

rtmp://localhost/live.

Then, type anything into the **Stream ID** (don't leave it blank).

A.5.6 RESOLVE OTHER PUSH STREAMING ISSUES?

If you are pushing your stream, make sure there are no ‘packet shaper’ units on the network. Traffic shaping (also known as packet shaping) is an attempt to control computer network traffic in order to optimize or guarantee performance, low latency, and/or bandwidth by delaying packets. However it can cause issues for pushed video streams.

A.6 FILES

A.6.1 PLAY FILES RECORDED BY TRICASTER ON ANOTHER COMPUTER?

Some operating systems do not provide native MPEG-2 support, requiring you to install a third-party MPEG-2 decoder on your computer (you may already have one installed if the system has a DVD player, or DVD authoring software).

(For a video player that works on both Mac and version, you may want to try the VideoLAN Client, a.k.a., VLC).

A.6.2 PREPARE CLIPS WITH EMBEDDED ALPHA CHANNEL?

Probably the best format to use for files with embedded alpha channel for use in TriCaster are those encoded using NewTek's own SpeedHQ 4:2:2:4 codec. This represents a high quality, moderately compressed format. (As a registered NewTek customer, you can download the NewTek Multi-Codec Pack from your personal Downloads page on the NewTek website.)

Apple® computer users have several options available which support an alpha channel, including the Animation and PNG Quicktime movie codecs (select "Millions of Colors +" in the codec settings to include alpha in the file).

A.6.3 PREPARE CLIPS FOR TRICASTER PLAYBACK USING APPLE® FINAL CUT PRO?

For SD video files exported from Final Cut Studio™, choose either DV or DVCPro in .avi format. (Alternatively, export a DVCPro .avi file from Quicktime Pro.)

A.6.4 EXPORT FILES FROM TRICASTER FOR USE IN APPLE® FINAL CUT PRO?

At the time of writing, importing MPEG-2 files recorded by TriCaster into Final Cut requires a few extra steps, as described below:

1. Record your files with **Use MPEG-2 Studio Profile** switched off (for more information, see Section 6.10.1).
2. Import the files into Final Cut. A red bar will indicate these clips need to be rendered within the editor. After rendering, they should be available for editing like any other clip.

A.6.5 IMPORT/EXPORT FILES LARGER THAN 4 GIGABYTES?

This question may arise if you are using external media, perhaps portable hard drives or USB 'thumb' drives. These are commonly prepared using the FAT32 file system, which does not support files larger than 4GB. As video files will often exceed this size, FAT32 is not very suitable for use in that context.

You should reformat these drives using the NTFS system to eliminate this limitation (or you might consider transferring larger files to TriCaster over a network connection).

A.6.6 INSTALL A CUSTOM LIVESET I CREATED?

To import a new LiveSet, save the files in the folder named below:

C:\TriCaster\user settings\default user\vsfx

A.7 SOFTWARE, MAINTENANCE AND UPDATES

A.7.1 IMPROVE PERFORMANCE?

1. Exit to the Administration desktop.
2. Click the **Defragment Hard Drive** link (see Section 11.1.2), and follow further directions provided. This process can take considerable time, so it's best not to commence unless time (before a production) permits.

A.7.2 RESOLVE SERIOUS INSTABILITY OR DROPPED FRAMES?

If the system becomes seriously unstable or is dropping frames with 'known compatible' video files (after the warm-up period), consider a full System Restore – see item A.7.10.

A.7.3 UPDATE TRICASTER?

1. Connect TriCaster to a valid Internet connection
2. Exit to the **Administration desktop**.
3. Click **Check for Software Updates**, and follow directions provided (see Section 11.1.4).

A.7.4 UPDATE THE FLASH™ OR WINDOWS MEDIA™ ENCODER?

TriCaster is not designed to be user-upgradeable apart from official NewTek updates. For certain features to work correctly, specific versions of third-party utilities must be present. These applications are upgraded in timely fashion by NewTek. It is quite likely that any attempted manual updates will have unintended results, and you are strongly cautioned *against* doing so.

A.7.5 INSTALL VIRUS PROTECTION?

Virus and malware protection applications can dramatically impact system performance (this is true even for Windows Defender™, which is deliberately disabled for this reason). In general, once additional software or services are enabled on TriCaster, real-time performance cannot be guaranteed.

In a perfect world, we'd love to recommend that you do not install virus and/or malware protection software on TriCaster. Certainly 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. Realistically though, in some settings you may feel the need for protection outweighs the risk.

If you really feel you *must* install virus protection, switch all of its 'active scanning' operations off so that nothing can occur in the background while TriCaster's **Live Production** desktop is running. Anything that provides full-time protection will dramatically reduce memory and disk speed on your system, so you should disable those features. Then, only when you need to do so (perhaps on a daily or weekly schedule), perform a manual scan.

Never let scanning continue into a live switching event, and do not assume that you can now omit pre-checking files and external media for nasty surprises. (In the unfortunate event that a contaminant *does* evade your defensive measures, you can always use TriCaster's **Restore TriCaster** function to completely rehabilitate your system.)

A.7.6 INSTALL MY FAVORITE SOFTWARE (OR CODEC)?

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

Regarding codecs, TriCaster supports the vast majority of popular image, audio and video formats. That said, hardly a day passes without another new one appearing on the scene. If a file you would like to use does not play back well (or at all), consider converting it to a friendlier format.

If you feel the format is so popular that TriCaster should support it, please submit the details as a feature request. (Please also see Section A.2.4 above.)

A.7.7 RESET MY LIVE PRODUCTION DESKTOP CONFIGURATION?

At times, a corrupt file or similar condition can cause the Live Production desktop to fail to launch. In most such cases, resetting TriCaster settings to their default state will restore functionality, without the need to take more elaborate measures.

1. Exit to the **Administration** desktop.
2. Click the **Reset Configuration** link.
3. Click **Launch TriCaster**.

A.7.8 RESOLVE A PROBLEM CAUSING AN 'EXIT TO ADMIN' TO RESTART TRICASTER?

1. Re-start TriCaster
2. As the system is just starting to re-boot, hold down the F8 key (or keep tapping it) to present the boot menu.
3. Choose the **Safe Mode** boot option.
4. Once there, go to **Start | Programs | TriCaster**, and run **Reset Configs**.
5. Click **Launch TriCaster**.

A.7.9 RESTORE MY TRICASTER ADMINISTRATION DESKTOP?

If for any reason the standard TriCaster Administration desktop fails to appear when you exit to Admin, you may need to restore it. This can be done without performing a full TriCaster Restore operation.

1. Right click on your Windows desktop and choose **Properties**.
2. Then go to the **Desktop** tab and click **Browse**.

3. Locate the folder names `C:\TriCaster\AdminPanel\` (choose the correct Admin panel folder for your model of TriCaster).
4. Select the file named `index.htm`.

A.7.10 RESTORE TRICASTER TO ORIGINAL 'AS-SHIPPED' CONDITION?

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? To restore your TriCaster system software:

1. Reboot TriCaster, and press F8 immediately after powering up and before Windows launches (you may need press F8 a few times in quick succession, say once per second).
1. This will present you with a black screen with menu items including "Safe Mode" and "Return to OS choices menu." Choose the latter option, and then select "Restore" from the next screen.

Note: Following a system restore, 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 to the exterior of your TriCaster.

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 **Tech Support** first may often be fruitful – see Section A.8.2). When you do restore, remember to update the TriCaster software afterward.

A.8 REGISTRATION AND TECH SUPPORT

A.8.1 REGISTER TRICASTER?

1. Read and accept the **License Agreement** shown when TriCaster launches.
2. Select and copy (Ctrl + c) the characters in the **Product ID** field in **Step 1** of the registration dialog that appears next.

3. If you have connected TriCaster to the internet, click the button in **Step 2** of the registration dialog.
4. Follow the directions on the Registration *webpage* (in the Customer Care section of the NewTek website) to obtain your **registration code**
5. If TriCaster does not have internet access, call (or email) Customer Service with the **Product ID**:

 (US) 1-800-862-7837
 (Outside US) +1-210-370-8000
6. <http://www.newtek.com/faq/index.php?contact=service>
7. Enter the **Registration Code** provided into the Registration dialog at Step 3 (Please see Section 4.3 for more detail.)

A.8.2 CONTACT TECHNICAL SUPPORT?

Visit the NewTek Website, at www.newtek.com and select **Technical Support** from the main **Customer Care** menu at the top of the page. This page always contains the latest support information for your NewTek products, including **FAQs** for all products. It also lists the Technical Support Department's hours of operation and contact details.

A.8.3 FIND TRICASTER'S REVISION NUMBERS?

Click the **About [?]** button in the **Live Production** desktop's titlebar. Doing this opens an information panel that lists relevant information.

A.9 MISCELLANEOUS

A.9.1 OBTAIN THE LIVE SET CONSTRUCTOR?

The Live Set Constructor is available for download in the Downloads section of your personal Registration area on the NewTek website (you will have to log in to see this page).

A.9.2 BOOT TRICASTER WITHOUT AUTOMATICALLY OPENING THE LIVE PRODUCTION DESKTOP?

There are two ways to do this:

1. Hold **Shift** before TriCaster's splash screen comes up. If you do this soon enough, TriCaster will launch to **Administration Desktop**.
2. Or, go to (Windows) **Start | All Programs | Startup**.
 - a. **Right-click** on the *Startup* folder, and choose **Open All Users**.
 - b. In the window that opens, remove the *Launch TriCaster* shortcut (by either deleting it, or moving it to the desktop).

When TriCaster boots, it will go to the **Administration Desktop** – without launching the **Live Production** desktop.

B STREAMING, NETWORKING AND THE INTERNET



TriCaster places high production value Internet video streaming within reach of just everyone. Numerous technical considerations do have an impact on the quality and accessibility of your stream, however. As well, there are a number of alternatives as respects the manner in which your productions are propagated to the world.

This chapter reviews these matters, and will help assure your viewing audience the best experience possible with the resources you (and they) have available.

Live webcasting has dramatically altered the broadcast landscape. Information can now be shared among audiences around the world for a very small transmission cost – and the future is bright!

11.4 STREAMING STRATEGIES

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 (costs vary based on considerations such as how many people watch your stream, how much web bandwidth you use each month, and so-on.) Some services based on an advertising model will even host your stream free!

11.4.1 ON DEMAND, OR LIVE?

Not all ‘streaming’ is ‘live streaming.’ The difference is similar to a) watching a television program you previously recorded at a time convenient for you, or b) watching a live event.

On demand streams are stored on a server (often supplied by an external service provider), ready to be transmitted whenever a viewer wishes. Live streams are only available at the time they are broadcast, such as during a live concert or event.

ON DEMAND HOSTING

TriCaster permits you to record live productions to a local hard drive. The resulting files can be hosted on a network later, so viewers can connect whenever they like. If you have the resources available, you can host the video yourself – but if many people will likely want to view your production, you will likely avail yourself of a service to stream it on your behalf.

Ideally, ‘on demand’ streaming video begins to play on request after a few moments of buffering - to let the stream get a bit ahead of the client playback device. (This stands in contrast to other types of online video distribution which requires the viewer to completely download the video file before he can begin play.)

Given a sufficiently high speed connection between host and viewer, they may well be able to enjoy a seamless viewing experience without stuttering or other issues.

LIVE STREAMING

Live streaming is a growing international market, and one you may well wish to serve. This form of streaming is a somewhat more demanding implementation. Rather than record a file and deal with it later, live video is transmitted over the network (effectively in realtime, give or take a little ‘time in the pipe’ as it were.) Delivering a good quality stream requires that you consider both your network connection capabilities and that of your viewers. As well, to ensure reliable delivery, you will ideally have some idea of the size of your audience. Nevertheless, for all cases, TriCaster gives you the tools to do the job!

Naturally, streaming video is highly compressed to reduce bandwidth demands and make it available to a wider group. TriCaster supports two popular and prolific encoding systems, Microsoft’s Windows Media™ and Adobe Flash Media ®.

The decision as to which encoding format to use for your live stream is up to you, or in some cases – your client. Here are some things to consider:

- Some corporate and institutional network administrators opt to support one or another type exclusively. (Check with your IT department to find out if this affects your decision.)

- Flash has a very wide installed user base, and seems poised to increase in proliferation in the foreseeable future.
- Flash works well across PCs, Macs, Linux, etc. Windows Media is well represented, but perhaps not quite to the same degree.
- Some sources report that the Flash movies will have a larger file size and use greater bandwidth than Windows Media for a given stream quality. (This is hard to assess, and changes constantly.)
- Codecs for both types are updated with fair regularity, and when you choose the 'latest, greatest' encoding, your viewers may not all have the current player, requiring them to download and install updates.

BANDWIDTH CONSIDERATIONS

You're going to hear and use the term 'bitrate' in connection with streaming video. This expression refers data throughput per second (generally measured in Kilobits per second, or Kbps.) Think of it as being like water flowing through a hose. You control the 'faucet', because you get to choose the Streaming Profile in your TriCaster's Stream to Internet panel. However, you don't own the 'hose' – or at least, not the entire hose. Once the stream leaves your immediate environment, even if you can supply good throughput locally, bandwidth may be constricted elsewhere along the transmission path.

Internet traffic can impose some limits, but a major concern is the sort of connection your viewing audience may have. Consider an example:

Even though you know that most of your audience will connect to your program using (relatively slow) wireless devices, you use a very high outgoing bitrate – thinking that this will surely be enough to supply any need. Perversely, though, your high bitrate may well ensure a poor result.

The client player tries to play the stream at the bitrate you specified, but (in this example) the wireless bottleneck impedes flow. It is as if you connected a fire hose on your end, giving them a suitable high capacity nozzle for their end – but in the last stage of flow, the stream

must pass through a small garden hose. Sadly, the stream will be quite insufficient, and output from the 'nozzle' (the client player) will falter badly.

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. Also consider the expected download abilities of your viewers. Ideally, a safety margin 1.5 times the stream's 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 smooth result, and is the wise course.

Nothing inclines viewers to turn away quicker than a stuttering, start and stop stream (see Section 11.7.1 for some useful resources).

11.4.2 STREAMING PROTOCOLS

Additionally, there are two primary streaming methods, known as “Pull” and “Push.” Choosing the best method for your needs is important. Let's review each, and consider what is best for your needs.

PULL BY END USERS

Simply put, the Windows Media Encoder in TriCaster allows your (networked) audience to connect directly to it, and it distributes the stream to them. Connecting in this manner requires you to have a connection with sufficient bandwidth to deliver a stream to each individual user. For this reason, the simple Pull streaming method rarely works well for more than 1 or 2 viewers.

Advantages:

- When TriCaster is not behind a firewall or does not have a public IP address, this is a very simple way to let a few viewers watch your program stream.

Disadvantages:

- Requires either a public IP address or requires users to be on the same network. Facilities such as hotels or convention centers will usually not provide a public IP address. Even if they do, getting them to open holes in their firewall is next to impossible

- If TriCaster is behind a router, your router must be configured to ‘port forward.’
- Requires significant bandwidth -- for example, with TriCaster connected to the Internet by a DSL or Cable Modem line, upload bandwidth is often less than 400kbits/second. Allowing for network overhead, at best a 320kbit steam can be accommodated. This bandwidth would be fully consumed by two viewers watching 160kbit streams, or a single viewer pulling a 170-320kbit stream. (Even a T1 digital line can only handle four simultaneous 300kbit streams.)

A variation on the Pull method involves using an external streaming provider. At one time the *only* method for streaming using such a provider was to have the server ‘pull’ it from the encoder.

Under this system the server did not receive the stream until the first user requested it. Then the server would connect to the encoder, pull the stream to it, and finally begin re-distributing it to everyone requesting it. This method worked passably until firewalls became more common.

Advantages:

- Pull doesn’t waste bandwidth; no signal is being sent out to the server unless somebody wants to view it.
- If you lose your connection to the (provider side) server, the server will re-connect to your encoder automatically when Internet connection resumes.
- Providers typically have significant bandwidth, and are able to meet necessary requirements to deliver stutter-free, high quality streams to large numbers of viewers.

Disadvantages:

- Like the “Pull by End Users” method above, this requires a public IP address, preferably a “static IP address” (which does not change dynamically if you need to reconnect) as well as open ports for the connection to be established. These requirements are becoming increasingly difficult to meet (given common security measures.)

PUSH TO PROVIDER

Windows 2003 Server introduced “Push” technology. With this method, the encoder sends the stream to the servers. This allows the encoder to establish a connection to the server on a

specified port. Once this connection is established, additional network ports may be opened as required (since the Encoder established the connection, not the server.)

Advantages:

- Easy to connect to the provider. There are no requirements for open ports on your local system, or public IP's. In addition, firewalls do not get in the way.

Disadvantages:

- Live streams that have no viewers are still consuming bandwidth. From a provider point of view, it is possible that all of our bandwidth could be utilized with no viewers. However, that is more theoretical than practical.
- Some external streaming providers *prefer* to Pull streams, as re-connection can be performed from their end automatically if necessary. But in many venues system administrators are very reluctant to configure their system with an open port to have your stream Pulled from.

11.4.3 STREAMING MEDIA PROVIDERS

Using a commercial streaming media provider (sometimes referred to as a Content Delivery Network, or simply 'CDN') bypasses otherwise high-bandwidth requirements for the encoding computer. When you have made arrangements for a streaming media provider to distribute your stream, the encoder only needs enough bandwidth to get a single a/v stream to the provider. All end users connect to the provider to view the stream.

Most streaming providers have access to massive bandwidth (and often, with a few hours notice, they can scale up your allotment on demand to meet a special need.) Since your local bandwidth is really only used for uploading a single stream, you can send a high quality stream, secure in the knowledge that it will not degrade as soon as a second viewer attempts to see it.

HINT: If you need to find a good streaming service provider, ask TriCaster customers for recommendations in the NewTek discussion forums.

11.4.4 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

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.aspx

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

11.5 TRICASTER STREAMING

Sending your video program output across a network (whether a local *intranet* or the Internet) can be almost as easy as connecting TriCaster to the network and pressing the Stream Output button on the lower left corner of the Live Production tabbed panel.

All the settings you need to configure your streaming output are located in the panel displayed when you click the Record/Stream tab (near the center of the LIVE Production tabbed screen.)

As mentioned above, TriCaster offers two encoding methods -- Adobe Flash® and Microsoft Windows Media™), along with two streaming modes Push and Pull. (We discussed these earlier in this chapter, and you've likely decided which is best for your purposes.)

11.5.1 PULL PROFILES

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.)

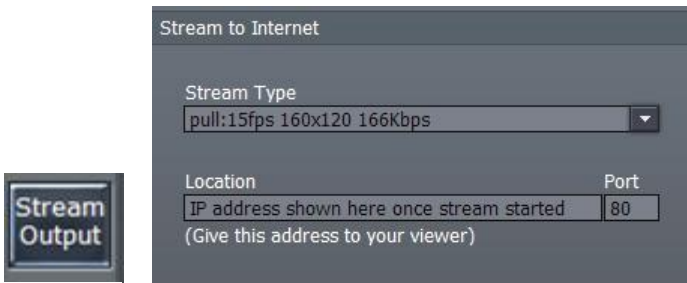


Figure 225

Figure 226

To see what Internet address to provide your customers or streaming provider, select a suitable Pull profile from the **Stream Type** menu. After pressing the **Stream Output** button, the stream will commence, and the button will turn red to indicate this.

Note: Flash streaming does not support Pull type connections. The Windows Media Encoder on your TriCaster supports Windows Media 11 and VC1 presets. VC1 is the video standard for HD DVD and Blu-Ray™ players, and is also used in some other environments such as gaming applications.

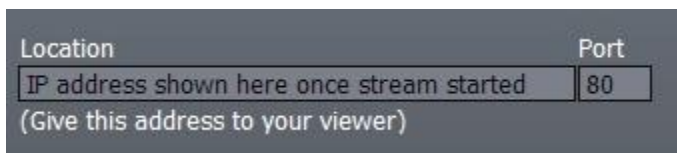


Figure 227

Once you begin (Pull) streaming, TriCaster displays the system's IP (Internet Protocol) address of your computer on the network. This information will be provided as 'punctuated' numeric value in the **Location** display field.

You can then drag the mouse over this address to highlight it, press Ctrl-c to copy it and send this address* to your customers or streaming provider. Your TriCaster program stream will go continuously to the network while Stream Output is enabled.

**IMPORTANT NOTE: If your TriCaster is connected to the network by a router, the IP number shown in the location field is only valid for viewers connected on the same side of the router as your TriCaster (as they might be in a local intranet configuration).*

Routers provide a measure of network security by masking the details of systems connected to them, thus preventing direct external access. The Location shown by TriCaster in this case is merely 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 11.7, Configuration and Troubleshooting for information on Routers and Port Forwarding.

You can provide any clients or streaming providers this mms: (Microsoft Media Server) 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.

Hint: Most web browsers can be also configured to invoke a compatible player when required, as well, but using WMP directly in this fashion may save some steps.

WRITE TO DISK

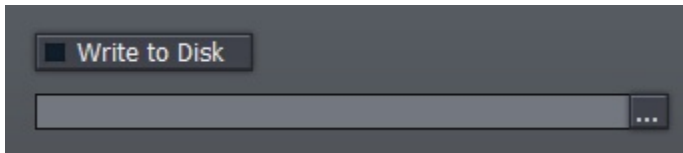


Figure 228

The **Write to Disk** option allows you to archive the live stream as a .wmv file (Windows Media Video.) Click the ellipsis (the [...] button) beforehand to choose where you wish TriCaster to save the resulting file.

*NOTE: If the **Write to Disk** option is chosen, it's important to remember to turn off the **Stream Output** button when the presentation concludes, or TriCaster will continue writing this file.*

11.5.2 PUSH PROFILES

Push streaming is generally the most convenient method, especially in cases where your TriCaster is connected behind a firewall. As discussed earlier, Push streaming is usually simpler when you need to stream from major venues (such as 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 dialogue allows you to enter a web **Address**, **Username**, and **Password**.

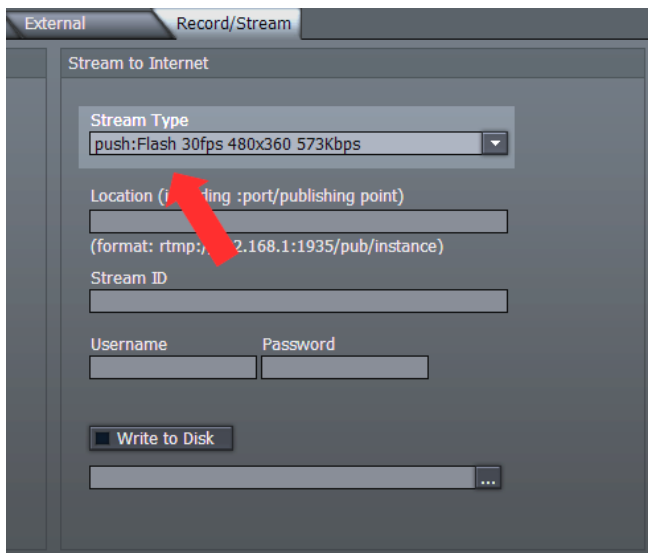


Figure 229

NOTE: the publishing point is placed at the end of the URL after a forward slash (i.e., <http://225.21.1.4:8080/NewTek>).

Selecting a Push profile from the drop-down **Stream Type** list and enabling the **Stream Output** button at lower left “pushes” the stream out of your location, and logs in to a pre-arranged web

address with username and password. (You enter these details in the fields provided in TriCaster's **Stream to Internet** pane beforehand, of course.)

WRITE TO DISK

Again, the **Write to Disk** option allows you to archive the live stream as either a .wmv file (Windows Media Video) or an .flv file type (Flash Media Video) - according to the encoding format appropriate for the Push profile you select.

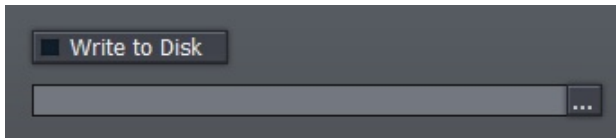


Figure 230

Click the **Browse [...]** button beforehand, to choose where you wish TriCaster to save the resulting file.

*NOTE: If the **Write to Disk** option is chosen, it's important to remember to turn off the **Stream Output** button when the presentation concludes, or TriCaster will continue writing this file.*

11.6 PRODUCTION AND CAPTURE CONSIDERATIONS

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 Output** button (rather than using the **Write to Disk** function in TriCaster's **Stream to Internet** area.)

The high quality captured files can then be used later in TriCaster's DDR's, edited in Edit Media, or even be transferred to another computer (even on a different platform) for external processing or editing.

Hint: use an external hard drive to transfer the files, or simply transfer them over a network.

You can always convert these files to a streaming file format later if you wish to supply them for on demand viewing over the Internet. This lets you retain best quality right through to final

output. When you eventually encode it for streaming, you can choose streaming settings that best suit the intended audience and streaming environment.

At the very least, if (perhaps to save conversion time) you capture video for Web distribution, it's best to capture it at (at least) the size that you intend for final output, to ensure satisfactory video quality for your viewers. When video is compressed (as it must be for the Web) you can lose important detail; compressing a full-screen video down to a quarter or a sixteenth of its size is a lesson in humility.

OTHER FACTORS

Other variables to keep in mind when you're creating video for the Web are contrast and motion. During video encoding for Web distribution, a fair amount of video information and detail can be lost. For this reason, good lighting of your source video is essential.

Also, web streaming doesn't handle detail, transitions and motion all that well -- so your best shots should be close up, and without a lot of movement.

Too, audio from cameras and camcorders is rarely as good as that from external microphones. You should at least use a clip-on lavalier microphone, if not a directional or shotgun microphone, to be sure you record only the audio you really want.

11.7 CONFIGURATION AND TROUBLESHOOTING

As technologies go, video streaming is still in its adolescent phase, at best. There are a lot of different standards and diverse environments to consider. TriCaster gives you the necessary tools, but there are still some teething problems you may encounter. This section will point you in the right direction to overcome them.

11.7.1 TESTING YOUR STREAM

When it comes to using your TriCaster in a professional live production environment (i.e., your bread and butter depends on getting it right, and now - not tomorrow), failure to test beforehand is not merely unwise - it can be professional suicide.

You should already be aware of the need for redundancy in a professional environment (you didn't bring just one camera, did you?) As reliable as any device may be, Murphy and his Law are

alive and well. So you plan for this, bringing the appropriate equipment, such as uninterruptable power supplies, backup recording devices (there's no shame in having a VCR backing up your digital record – 'low tech' still has a place in the grand scheme.)

But you also need to perform onsite testing, to ensure your live stream is working well before 'zero hour.' No-one will thank you for excuses, no matter how brilliantly they point the finger at forces beyond your control.

- Set up and enable a test program stream from your TriCaster.
- Use another system to open Windows Media Player™, and use its menu (in some versions, you need to right-click WMP's title bar to present the menu) to select **File | Open URL**.
- Enter the IP address and port number for your stream here
- You should be able to connect and view your program stream

Success at this point does not necessarily mean you're done. You may be able to see the stream locally, but can someone outside the local environment connect to it over the Internet?

The best way to find out is to have someone at a remote location verify that your stream is streaming properly. If it is, great! Otherwise, keep reading...

TESTING WITH PING

Before your stream can be seen - whether on a local intranet or the Internet - client computers (or your service provider) need to be able to establish a network connection with your TriCaster. **Ping** is a humble but effective tool to ensure the basic connection exists, thus It can help you with streaming, **iVGA** and **LiveText** connection issues, too (and it works just fine in a multi-platform environment!)

Ping sends a small set of data packets to the target host (IP number), then 'listens' for an echo response in return. Ping estimates the round-trip time in milliseconds, records any data losses, and displays a summary when finished. Bottom line, if you can't ping your target, your connection has problems (the problem might be as simple as a bad cable connection.)

Finding the target IP number:

To issue a ping, you need know the IP number of the target computer.

On a Windows XP® system, you can find this number by:

1. (On TriCaster, click the [x] button in the upper-right corner of the screen, and select **Admin** to get to the Windows Desktop.)
2. Next, select **Network Connections** from the Windows **Start Menu** (look in the **Settings** sub-menu if it is not listed at the top level.)

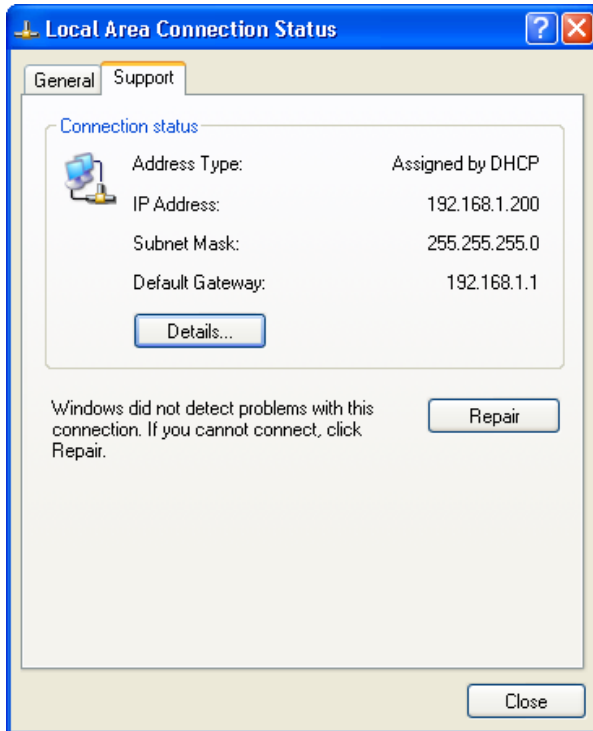


Figure 231

3. In the **Network Connections** panel, right-click on the icon for your **LAN** (local Area Network) and select **Status**. The **IP Address** for the system is shown on the **Support** tab.

To find the IP Address for a system running OS X®:

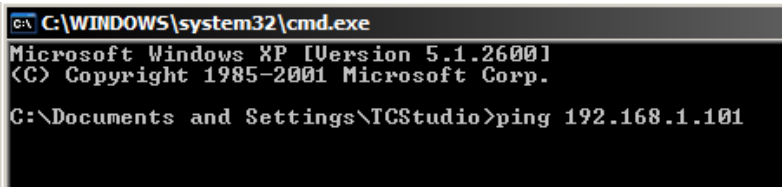
1. Click the Apple icon at upper left on the Desktop, and select About **This Mac**. Click **More info ...** in the panel which opens, then click **Network** in the **Contents** column at left. The IP number for the Mac will be listed in the right hand pane.

Issuing a Ping

Ping is a command line program, and must be run from a command shell on the issuing computer. To open a command shell and send a ping, follow the procedure below that applies.

Windows

1. On TriCaster, click the [x] button in the upper-right corner of the screen, and select **Admin** to get to the Windows Desktop.
2. For all Windows XP® systems (including TriCaster) select the Windows Start Menu command **Run**
3. Type “**CMD**” (without quotation marks) into the **Run** dialog panel
4. Press your **Enter** key a command shell window will open.)
5. Type “Ping” (without quotes) followed by a space and the target IP number, as in the image below – then press **Enter**.



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\TCStudio>ping 192.168.1.101
```

Figure 232

6. Ping will go to work, and in a moment or two begin reporting results. A ping *failure* (indicating a network problem) will look like Figure 233. A success ping will display a report like Figure 234.

```
C:\C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\TCStudio>ping 192.168.1.101

Pinging 192.168.1.101 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.101:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Documents and Settings\TCStudio>
```

Figure 233

```
C:\C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\TCStudio>ping 192.168.1.101

Pinging 192.168.1.201 with 32 bytes of data:

Reply from 192.168.1.201: bytes=32 time<1ms TTL=128
Reply from 192.168.1.201: bytes=32 time<1ms TTL=128
Reply from 192.168.1.201: bytes=32 time<1ms TTL=128
Reply from 192.168.1.201: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.101:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\TCStudio>_
```

Figure 234

Apple OS X

For a system running Apple's OS X®, double-click **Terminal** in the **Applications\Utilities** folder. Type the following command into the Terminal (without quotations) and then add the IP number, and press **Enter**:

"ping -c 4 ipnumber."

So, for example, you might type: `ping -c 4 192.168.1.101`

The response will be similar to the Windows example described above. Again, a ping failure indicates a problem with the network connection.

PULL CONNECTION ISSUES

Note that - if you are 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.) You will also need to enable “port forwarding” on the router.

Again, in this environment you may wish to 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.

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.)

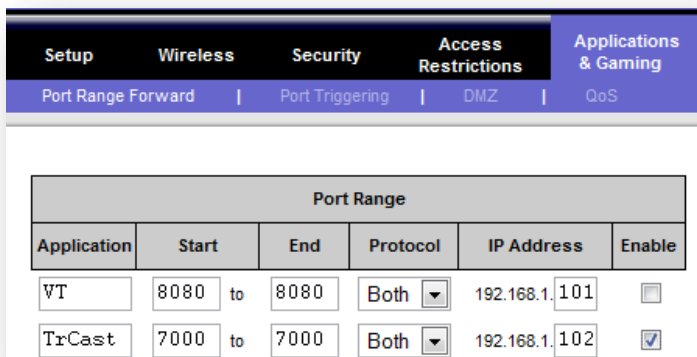
To enable port forwarding, you need three pieces of information:

1. 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 you have set previously.

2. The specific IP local number that the router has assigned to your TriCaster. You can read this right from the 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.)
3. 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



Port Range					
Application	Start	End	Protocol	IP Address	Enable
VT	8080	to 8080	Both	192.168.1.101	<input type="checkbox"/>
TrCast	7000	to 7000	Both	192.168.1.102	<input checked="" type="checkbox"/>

Figure 235

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 the TriCaster's **Port** field.
5. IF possible, select Both for **Protocol** (or select UDP)

6. Enter the full (punctuated numeric) local IP address shown in the **Location** field of your TriCaster after you enable the stream.
7. Checkmark **Enable**

Note: Some routers may have other security settings that need to be modified for your Pull stream to be visible from the outside. For example, the Linksys® router shown above has a setting in the 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 request that your system permit them to Pull the video stream, is it?

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

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 exception in the Windows XP Firewall can be found in its Help system:

- Open the Windows Security Center (double-click its icon in the Task Tray)
- Click "How does a firewall help protect my computer"
- Click "Related topics"
- Select "What are Windows Firewall settings used for?"
- Click "Related topics" again.
- Click "Allowing a program to communicate through Windows Firewall"

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 simply 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.

SPEED TESTS

Are you sure your upload bandwidth is adequate to the bitrate you’ve set for your stream? Why not test and make sure. Again, a number of websites provide free speed testing. These will give you a basic idea of what your local bandwidth really is. One site which provides a list of online speed test resources is: <http://www.dslreports.com/speedtest?more=1>

C PERFORMANCE CONSIDERATIONS



Your TriCaster has been carefully designed to faithfully execute its duties under any reasonable circumstances. Still, your production environment – especially in remote locations – may impose limitations that you are wise to consider.

This chapter discusses a few matters that may help you get optimal performance in less than ideal settings.

C.1 TESTING, ONE TWO ...

Professionals simply do not leap into new environments blindly. They prepare, plan, plan some more, and then – most importantly – they test. This allows them to tackle the really tough jobs with confidence.

C.2 iVGA AND PERFORMANCE

Although iVGA is highly efficient, it does require *significant* system resources – taxing the CPU, GPU (and even the AGP or PCIe bus) of client systems, especially when a large portion of the display is refreshed. This is not normally problematic as – for iVGA purposes – the client system is not required to perform other concurrent tasks. Its entire duties involve providing a video source for the (downstream) TriCaster via the iVGA client software. However, it is *very* unwise to install and run the iVGA client software directly on a TriCaster itself.

TriCaster’s live video processing requires unhindered CPU and GPU access. Adding the resource demands of the iVGA client to TriCaster would almost certainly cause frames to be dropped on output, and should simply never be done. The same warning applies to other ‘screen-sharing’ or ‘remote desktop’ applications, which would actually be as bad or worse.

Of course iVGA benefits from the fastest possible network connections between remote clients and TriCaster even when “used as directed”. This is especially true if you intend to stream high resolution motion graphics to TriCaster using iVGA.

C.3 IMAG AND LATENCY

What's IMAG? It's a compression of the expression "image magnification." Typically in modern IMAG applications, video cameras supply live imagery to projection systems, magnifying speakers and performers so that audience members further back in large venues can still see what's going on.

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 – in the form of the audio and video streams.

C.3.1 RELATIVITY AND THE SPEED OF LIGHT

Wouldn't it be nice if audio and video travelled from their respective broadcast devices at the same speed? Then, wherever you were seated in the audience, the sound from hypothetically perfect speakers and the video image from huge video displays co-located at the front of the auditorium would reach your ears and your retinas at precisely the same moment!

This is not the case, however. Sound travels quite slowly – so slow, in fact, that even in relatively small venues it reaches those in the rear of the audience noticeably later than those in the front.

In loose terms, for a mid-size auditorium 600 feet long, it takes around a half-second for the audio to reach those in the back.

For this reason, audio engineers often position speakers throughout the 'house', then introduce carefully considered delays by electronic means - to ensure 'late sound' from front speakers does not arrive after sound from the nearest speaker to those further back.

Light, on the other hand, travels so much faster that for all intents transmission can be considered instantaneous in the same setting. So a person in the rear will see the image on a screen at the front long before sound from a *co-located* speaker arrives.

If transmission of the video signal from the camera's lens right through to the projection screen were instantaneous (it's not, mind you), we'd likely need to *find* a way to delay it (as otherwise, the carefully timed delays the audio engineers induced would ensure a mismatch between video and late arriving audio). Viewed in this light, a certain amount of latency is actually "A Good Thing!"

Still waiting for the promised mention of ‘relativity’? OK, here it is then: $E=MC^2$

C.3.2 LATENCY AND YOUR AUDIENCE

“Latency” – what’s that you ask? 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. Latency is usually expressed either in milliseconds or in video “frames” (typically either 25 or 29.97 to the second.)

As we said above, really a little video latency is not a bad thing as viewed from a surprisingly short distance back into the audience. This is just as well, since for all practical purposes a little latency is also unavoidable.

Even so, as long as audio and video are in sync *at your seat*, only a rather ‘significant’ degree of latency will be objectionable – unless you happen to be very near the stage. For those in the front rows, a few extra frames of latency *may* be rather disconcerting. (It’s true that IMAG was conceived primarily for the benefit of those further back, but if the latency is too obvious for those nearest the front it can be disconcerting distraction.)

For this reason, it’s desirable to keep video latency to an agreeable minimum – but put away any notion of ‘zero latency.’ Not only would this require bending the laws of physics, it would be a bad idea.

Even before considering minimizing latency in the device chain, acknowledging that there is always going to be some latency calls for some creative thinking with regard to practical staging. For example, if you design your IMAG layout in such a fashion that those in the front row are unlikely to be able to see the screen(s) without lifting their eyes from the onstage talent, they are extremely unlikely to notice a small amount of latency.

C.3.3 LATENCY AND YOUR TRICASTER

TriCaster is a wonderful tool in the IMAG arsenal, but inevitably it is only one (albeit critical) link in a chain of devices. It is common for each device to contribute a little to the combined total latency for the system.

TriCaster’s portion of the total latency sum is well within acceptable standards for devices of this sort – roughly between 2 and 3 frames (the actual amount can vary slightly within this range, depending on several factors).

For example, suppose a ‘video frame’ supplied by a camera arrives at TriCaster’s inputs one millisecond after a different frame has been sent to the output. Obviously the new arrival must wait its turn; it can’t be transmitted until the correct duration for its predecessor has elapsed. Thus the newly arrived frame must ‘wait’ almost one entire frame, until its turn comes.

How can you achieve the lowest possible latency for the TriCaster section of the IMAG chain? An important element is to ‘Genlock’ your cameras to the TriCaster output (see Sections 4.5 and 6.12.2). This allows TriCaster to bypass its input time-base correctors, diminishing latency by about one frame (to its practical minimum of roughly 2 frames.)

Hint: you can actually assess the latency of your TriCaster installation fairly easily. Run timecode directly to 1) a monitor and at the same time 2) through the TriCaster to a second (identical) monitor. Take a photograph that encompasses both monitors, and compare the timecode shown!

C.3.4 OTHER SOURCES OF LATENCY

More often than not, significant latency is added by other devices in the IMAG chain that come *after* the TriCaster. Projectors are a common contributor, but at times the cameras themselves are a factor.

Here are some helpful points to consider when designing and connecting your system:

- If you use VGA Output from the TriCaster to the projector -- if at all possible, match the resolution sent from the TriCaster to the native resolution of the projector. On some projectors this allows the unit to avoid using its own internal scaling, which is often a significant factor in unwanted latency.
- When possible, try supplying the projector with analog video. This can eliminate a lot of the complexity from the process (of course, this is not always possible.)
- Certain projectors provide a special ‘low latency mode’ to disable features of the unit that carry a heavy toll in latency. Enabling this mode can make the positioning of the projector slightly more challenging (as you may sacrifice some ability to position and scale the image using projector menu functions) -- but the latency reduction can be very worthwhile.

- Some cameras include features that add more latency than you would expect. For instance, image stabilization (by definition) adds one field of latency and sometimes more. Disable anything of that sort that you can.
- Latency may be slightly lower for progressive sessions, so for lowest latency, (genlocked) 720p cameras and session are theoretically ideal.

D VIDEO CALIBRATION



An oft-heard expression is “Don’t worry – we’ll fix it in post”.

Post-production techniques are invaluable, but they do not repeal another often repeated axiom – “Garbage in, garbage out.” And, in the case of live production, the results are immediately obvious to your audience, for good or for bad.

For these reasons and many more, it’s important to control the visual quality of your work all the way through the production pipeline. Adequate lighting, good cameras, and high quality connections are critical, but there are other things to consider.

Human vision is remarkably adaptable. In one study, participants equipped with inverting lenses initially saw everything upside-down. After a few days, people reported that things appeared right-side-up again.

Even when things are dramatically wrong, our brains compensate to a remarkable degree. Have you ever looked at a television in a store without noticing anything untoward, and then realized that the colors on another unit nearby looked much better?



This built-in tolerance makes it difficult for us to judge whether the blacks in our video productions are really black –or just dark gray; whether reds are purple or tinged with a slight greenish caste, and so on. What we really need is a reference for comparison – just as we find it easier to pick the best-looking display from a row of television sets on a store shelf.

D.1 WHAT (AND WHERE) TO CALIBRATE?

Tip one – forget ‘point and shoot’. Lighting, set design, and countless other factors have an impact on the video attributes our cameras ‘see’.

As a first step, cameras need to be properly calibrated. *Ideally, this is done right at the camera.* Corrective measures taken downstream never fully compensate for problems at the first link in the chain. Most cameras, even inexpensive consumer models, provide adequate controls for this purpose.

Some other video sources do not offer much if anything in the way of adjustment, however. You may need to adjust TriCaster's Proc Amp settings to improve previously recorded video played from a DVD player, or a networked 'video chat' system.

In both cases above, TriCaster's **Waveform** and **Vectorscope** monitors will help. We also need to give consideration to *downstream* devices, though.

Computer displays are inherently different than television sets. Thus the video you see on your computer interface can vary quite a bit from what your viewers see on their televisions. Too, you will want to be able to correctly judge colors when preparing titles and graphics. It will help you a great deal if your downstream (from TriCaster) video monitors are properly set up to allow you to make these judgments.

D.2 CALIBRATING VIDEO SOURCES

The obvious disparity between neighboring televisions on display in a store amply demonstrates that even identical (and brand-new) video devices can differ dramatically. When mixing multiple cameras we need to ensure that their output matches. Switching to a camera with obviously different color characteristics will be seen as a glaring error by your viewers.

Even when we restrict matters to a single unit, color characteristics can change as the system warms up, and as it ages. For this reason, it's important to allow a device to warm up before attempting to calibrate it.

D.2.1 SETTING BLACK AND WHITE

Naturally, the color range available for transmission and recording is bounded at the upper level by white and at the lower level by black. Anything else falls somewhere in-between.

Consider what happens if you gradually raise the brightness control on your television. Beyond a certain point (and unlike claims made for laundry detergent) your whites do not become whiter. They can't – the upper limit (white) is firmly fixed.

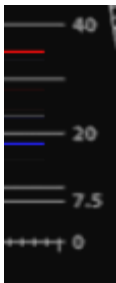
Instead, parts of the image that are nearly white are boosted, eventually also becoming white. Meanwhile, black portions of the picture are tending towards gray. Since white cannot become whiter, and black has become gray, we could say that the dynamic range of the image has been narrowed. The net result is a less vibrant image.

The same thing is true for video from your cameras. If the black and white levels from the camera are incorrect, you are effectively losing either shadow or highlight detail. For this reason, the first thing many do is calibrate their camera for correct levels.

WAVEFORM MONITOR

For video engineering purposes, the scale between black and white is defined in **IRE** units (IRE being an acronym for “Institute of Radio Engineers”). White is pegged at **100 IRE**. For PAL (and NTSC-J) countries, black is defined as **0 IRE**. For NTSC lands, black properly sits at **7.5 IRE**.

Using TriCaster’s **Waveform** monitor (in the Live Desktop’s **Preview Scopes** tab), you can actually see the IRE values for your video sources graphed on a vertical scale (select the source on the Switcher’s **Preview** row).



Confirming that the black and white levels your camera is sending TriCaster are correct is as simple as sending first black, and then white, and reading the value from the scale.

Figure 236

Connect your camera to the correct TriCaster input, block the lens so it receives no illumination, and check the level shown in the Waveform monitor. For NTSC, it should be 7.5 IRE, for all others, 0 IRE.

To check white, use a standard white card or even a sheet of white paper. Ensure that it is evenly illuminated with *the same lighting your main subject will receive*, move or zoom to fill the viewfinder with it, and confirm that the Waveform monitor is showing 100 IRE.

If not, you might try using your camera's **Auto White Balance** feature with the white card – your camera manual will provide instructions. Afterwards, check the black level again. Some more professional cameras offer full manual controls for white balance and/or black level. Use these as instructed to ensure your camera is providing the correct white and black levels.

If you cannot make source adjustments, or can't get it quite right by these means along, you can use the **Brightness** and **Contrast** controls in the **Proc Amp** TriCaster provides for that input to tweak black and white levels. (Of course it is always best to perform adjustments at the source if possible.)

D.2.2 ADJUSTING COLOR

We're going to move into color calibration next, but first we can actually use our black and white signals for some further tests.

VECTORSCOPE

While we're still working with black and white levels, we can introduce TriCaster's **Vectorscope**, and perform an initial test of the camera's color balance.

A vectorscope (Figure 237) can be likened to the familiar 'color wheel' (Figure 238) which sweeps radially through the colors of the spectrum – yellow, red, magenta, and so-on, around the arc of a circle. Colors are more progressively intense (saturated) towards the outside of the circle, while color saturation is zero at its center.



Figure 237

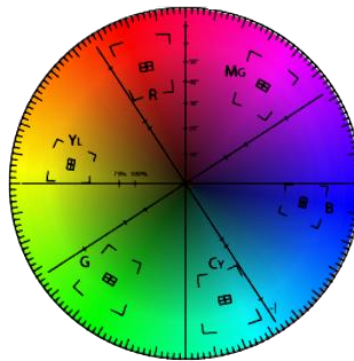


Figure 238

As it happens, from the vectorscope point of view, neither black nor white properly have any color saturation. Thus with the lens cap on (or with a white card filling the viewfinder), the vectorscope should show only a small fuzzy trace at its center. If the fuzzy dot is off-center horizontally or vertically, this would indicate that the camera is incorrectly calibrated, actually tinting gray areas.

When the trace *is* off center, the direction and distance of the offset tells us what sort of tint (and how much) is represented by the deviation. You may be able to use the color controls at your camera to correct for this offset, or you can use the **U Offset** and **V Offset** controls in TriCaster's **Proc Amp** to do so (as always, source controls are best). Adjustments to U Offset move the trace left or right, while V Offset changes adjust its vertical position.

Let's move on to a slightly more rigorous testing.

D.2.3 COLOR METRICS

At this point, we've assured ourselves that the signal from the camera is neither too bright nor too dark, that its output falls within broadcast legal luminance limits, and that the black & white part of the signal does not have an unwanted color cast.

We haven't done anything yet, though, to assure our reds are red, not slightly brown, or that our blues are not slightly green or magenta, etc. The **Vectorscope** can provide much more specific information about your camera's color signal. Let's see how it can assist you to ensure your colors are accurate.

USING COLOR BARS

You'll no doubt have seen the familiar color bars used as a standard reference for video signal calibration. Two examples are shown here. Figure 239 is an example of the color bars used in NTSC countries, while Figure 240 is a PAL example, common throughout European nations.



Figure 239 (NTSC)

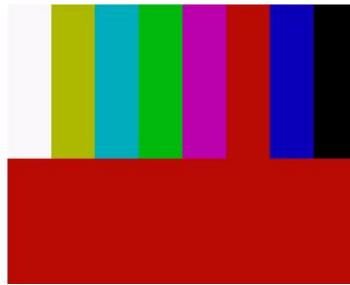


Figure 240 (PAL)

You can use color bars in conjunction with TriCaster’s **Waveform** and **Vectorscope** to make sure the video supplied to the Switcher is consistent, accurate and broadcast legal.

Most video cameras are capable of displaying color bars – check your camera manual to see how to display these (given a choice, use 75% bars). Then look at the **Vectorscope** to see how it traces the individual colors comprising the image.

The Vectorscope graticule has six distinct rectangular *targets* – Yellow, Red, Magenta, Cyan, Blue, and Green. The targets are small rectangles with a cross-hair superimposed on them.

When a source is properly calibrated, the trace from the different colored segments of the color bars displayed will fall right inside their individual targets. If the trace vectors do not line up as they should even after performing a white balance at the camera, you can use TriCaster’s **Proc Amp** controls to tweak the signal.

Adjust the **Hue** control to rotate the vectors around the center point to line them up correctly on their respective targets. Increasing **Saturation** will move the trace further out towards the edge of the scope. Decreasing Saturation lowers color intensity, bringing the trace back closer to the center.

Hint: Naturally, you should repeat the steps above for each connected source, to ensure a perfect match when switching from camera to camera during your live productions.

At this point, your video signal should be reasonably accurate, and broadcast legal. Naturally, there are other devices between that signal, you, and your viewers. Let’s discuss ways to calibrate downstream video monitors to ensure that you see your video at its best.

D.3 CALIBRATING YOUR MONITORS

In most cases, you will use a computer monitor of one type or another to display TriCaster's controls – the so-called user interface. Even though the television monitors you likely use for final program output may look somewhat similar to your computer monitor, they do differ in a number of important respects. For this reason, we will approach their calibration separately.

D.3.1 COMPUTER MONITOR

This is a subject that could (and does) easily fill multiple volumes, but which we will sadly give short shrift. It may not be *quite* as important to achieve 'spot-on' color calibration for the monitor used for the user interface. Not surprisingly, video output color is best judged on larger downstream video monitors.

Nevertheless, you may find a trip to one of any number of websites providing test imagery and calibration Hints useful. A search for "computer monitor calibration" will yield an endless list, along with some commercial utilities for those who feel the need. Here are links to several such sites:

<http://epaperpress.com/monitorcal/>

<http://www.lagom.nl/lcd-test/>

<http://www.jasc.com/support/kb/articles/monitor.asp>

<http://www.photofriday.com/calibrate.php>

http://www.onecomputerguy.com/windows7/windows7_calibrate_color.htm

D.3.2 PROGRAM OUTPUT MONITOR

Again, a search of the internet for "video monitor calibration" will yield a large number of resources, both free and commercial. If you have television monitors connected to TriCaster's outputs, though, you can make further use of the color bars. The approach is somewhat similar to what we did for our video sources, in that the first adjustments are to ensure that black and white levels are correct. Color calibration is performed afterward.

First, warm up your monitor for at least 10 minutes (some sources recommend a half-hour), to stabilize its output. Dim room lights and window light, to eliminate light sources that might skew

your color perception. Pass the color bars from your camera through to program output (or use a color bars image in one of TriCaster’s media players for this purpose.

D.3.3 SETTING BLACK AND WHITE

As mentioned earlier, NTSC and PAL (and NTSC-J) regions use different black levels, so it’s no surprise that they take different approaches to setting black and white levels, and that their respective color bar displays vary from one another. Likewise, we’ll treat calibrating for NTSC and PAL separately.

NTSC

NTSC color bars have a special group of grayscale bars designated as the “PLUGE” (the acronym stands for Picture Line-Up Generation Equipment) in the lower-right area.



Figure 241

(The images in this section have been adjusted slightly to accentuate the subtle differences in the black bars making up this region.)



Figure 242

The large blocks at left and right in the PLUGE represent 'NTSC black' - 7.5 IRE. Between these larger blocks are three smaller bars – one at left that is slightly *darker* than NTSC black (3.5 IRE), one at right that is slightly *lighter* (10.5 IRE). These are separated by another equal-sized 7.5 IRE bar.

Our criteria for adjusting black level takes advantage of the fact that nothing in NTSC should ever be 'blacker' than 7.5 IRE. This means that when the monitor's black level is too bright, both the 7.5 IRE and 3.5 IRE bars will be distinct. Set properly, it will be impossible to distinguish them from one another. Conversely, if the monitor's black level was too dark, it would be impossible to distinguish between the (lighter-than NTSC black) 10.5 IRE bar and its darker neighbors.

Here are steps you can follow:

1. Having warmed the monitor up as described earlier, start by enabling the monochrome switch, if your monitor is so equipped (otherwise, turn the **Color** or **Saturation** knob all the way down).
2. Set the monitor's **Contrast** knob to its center detent.
3. Play with the **Brightness** knob until you can clearly discern the bars for all three black levels in the **PLUGE**.
4. Gently turn **Brightness** down until the 3.5 IRE and 7.5 IRE bars merge, becoming indistinguishable from one another.
5. You should be able to just notice the difference between the 7.5 IRE bars and the brighter 10.5 IRE bar.
6. Raise the **Contrast** level, brightening the 10.5 IRE bar quite a bit. You may notice that the large white bar second from the left at the bottom (Super White) becomes overblown, showing blooming into its neighboring color bars.
7. Dial **Contrast** back down until the Super White bar is just white, not blazingly so, and does not bleed into the other bars. The 10.5 IRE bar in the PLUGE should be just distinct from the 7.5 IRE bars again at this point.

PAL

1. Warm up the monitor as previously mentioned.
2. Set the monitor's **Color (or Saturation)**, **Contrast** and **Brightness** to their lowest settings.
3. Slowly raise **Brightness** until the black bar just begins to lighten.
4. Adjust the **Contrast** until the bars seem to be evenly graduated (ignore the white bar).
5. Tweak the **Contrast** watching the white bar carefully. When it stops getting brighter in response, pull it back slightly to the point where it just starts to have a dimming effect again.

D.3.4 COLOR ADJUSTMENTS

Having set the black and white levels earlier, let's continue...

NTSC

1. If your monitor has a "Blue-gun only" setting, enable it. Depending on the brand of your monitor, the alternating bars will appear either as light gray and black, or blue and black (Figure 243).

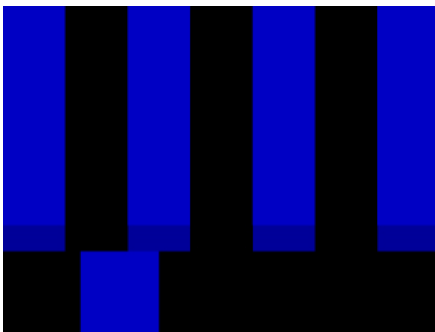


Figure 243

2. If the monitor lacks a “Blue-gun only” feature, you can obtain a colored filter such as a Kodak Wratten #47B gel, and hold that between your eyes and the monitor for a similar result.
3. Tweak the **Color** (or **Saturation**) knob until the small rectangular patches at very bottom of the tall upper bars on the extreme right and left of your screen merge with the tall bars above.
4. Tweak the monitor’s **Hue** control until the small rectangles beneath the third and fifth tall upper bars likewise blend into bar above.
5. You may need to redo the last two steps several times, balancing the adjustments of these two controls until all four of the lighter bars evenly match the smaller rectangles just beneath them. (Note that a perfect match simply may not be possible on some monitors.)
6. Check your results with some familiar imagery, and make any further tweaks you feel are required.

PAL

1. If your monitor has a “Blue-gun only” setting, enable it. Raise the **Color** or **Saturation** setting until the three right hand bars all appear to be the same shade.
2. If the monitor lacks a “Blue-gun only” feature, you can obtain a colored filter such as a Kodak Wratten #47B gel, and hold that between your eyes and the monitor for a similar result.
3. Turn off the “Blue-gun only” feature (or dispense with the filter if you used one), and examine the red bar. It should appear not be so vivid that it bleeds onto the nearby bars.
4. Check your results with some known familiar imagery, and make any further tweaks you feel are required.

E KEYSTROKE SHORTCUTS

E.1 LIVE PRODUCTION

E.1.1 SWITCHER

Live Row, Inputs 1 – 11 (as applicable by model)	F1 – F11
Preview Row, Inputs 1 – 11 (as applicable by model)	1 – 0 and minus (11)
Effects Row, Inputs 1 – 11 (as applicable by model)	Alt + 1 – 0 and minus (11)
Fade Overlay On & Off	F
Take Overlay On & Off	D
Fade All	A
Take All	S
Network In Overlay On/Off	Esc (Escape Key)
Master Fade to Black (to BG, STUDIO/BROADCAST 6-cam mode)	Backspace (or Ctrl + B)
Select Transition (prev/next)	, and .
Slow... Medium... Fast	Z... X... C
Slower Speeds	Shift + Z... X... C
Faster Speeds	Alt + Z... X... C
Random Transition from Bin	Alt + / (the ? Key)
Reverse Transition (off/on)	E / Shift + E
Advance Transition (off/on)	R / Shift + R
Remove Current Transition	Shift + Delete Key
Remove All Transitions	Alt + Delete Key

E.1.2 T-BAR

Take	Return Key
Take T-Bar Back to Top	Shift + Return
Auto... Go/Pause.	Spacebar
Auto Reverse	Shift + Spacebar
Adjust T-Bar... Down/Up	T / Shift + T (faster add Alt)
Halfway T-Bar... Take/Auto	H / Shift + H
User T-Bar Position... Take/Auto	G / Shift + G
User T-Bar Position... Set/View	Alt + g / Alt Shift + G
LiveSet - zoom In/Out LiveSet selected on Preview	Page Up, Page Down

E.1.3 DDR 1 & 2

Play/Stop	K
Jog Backwards/Forwards	J / L
Rewind/Fast Forward	Shift + J / L
Stop/Go to Start	Ctrl + K
Pause (On/Off)	P
Cue On/Off	U
Go to Start/End	Home / End Keys
Step through Clips	Up / Down Arrows
Playlist - select to top	Shift + Home
Playlist - select to bottom	Shift + End
Playlist – add to selection (up)	Shift + Up arrow
Playlist – add to selection down	Shift + Down arrow
One Frame Back/Forward	L/R Arrow... or Alt + J / L
Five Frames Back/Forward	Shift + Left/Right Arrow
One Second Back/Forward	Ctrl + Left/Right Arrow
Go to Time Position	Ctrl + G
Loop On/Off	,
LED Normal/Time Remaining	;
LED Local/Total Time	Shift + ;
Mark In/Out Point	I / O
Clear In/Out Point	Alt + I / O
Go to In/Out Point	[and]
Adjust In Point	[+ Left/Right Arrow
Adjust Out Point] + Left/Right Arrow

E.1.4 VGA OUTPUT

Take VGA Overlay	Esc
Fade VGA Overlay	Shift + Esc

E.2 CAPTURE MEDIA

E.2.1 CAPTURE

Record/Stop	Enter Key
Pause Toggle	Spacebar
Delete	Delete Key (when stopped)

E.2.2 DV DECK CONTROL

Reverse Shuttle	J
Pause / Play	K
Forward Shuttle	L
Rewind	Shift + J
Stop	Shift + K
Fast Forward	Shift + L
One Frame Back	Alt + J (when paused)
One Frame Forward	Alt + L (when paused)
Go to Time Position	Ctrl + G

E.3 EDIT MEDIA

E.3.1 CAPTURE

Record/Stop	Enter key
Pause toggle	Spacebar
Chop recording	Backspace
Reset (Clear) recording	Delete key (when recording)
Delete	Delete key (when stopped)

E.3.2 DV DECK CONTROL

Reverse Shuttle	J
Pause / Play	K
Forward Shuttle	L
Rewind	Shift + J
Stop	Shift + K
Fast Forward	Shift + L
One Frame Back	Alt + J (when paused)
One Frame Forward	Alt + L (when paused)
Go to Time Position	Ctrl + G

E.3.3 PLAYBACK

Play/Stop	Spacebar (or K)
Pre-roll and Play	Shift + Spacebar
Backwards/Forwards	J / L
Rewind/ Fast Forward	Shift + J / L
Stop/Go to start	Ctrl + K
Go to Time position	Ctrl + G
Go to Start/End of project.	Home / End buttons
Step through clips	Up / Down arrows
Step through clips and zoom (timeline)	Shift + Up / Down arrows
One Frame Back	Left Arrow... 1 or Alt + J
One Frame Forward	Right Arrow... 2 or Alt + L
Five Frames Back	Shift + Left Arrow... or 3
Five Frames Forward	Shift + Right Arrow... or 4
One Second Back	Ctrl + Left Arrow
One Second Forward	Ctrl + Right Arrow
Adjust Offset (-/+ 1 frame)	Alt + Left/Right Arrow

E.3.4 DRAG AND DROP

Clone	Ctrl + drag
Inherit	Alt + drop item
Preview in and out points	Alt + rollover

Load (Targa) File Sequence as Clip	Alt + drag from Filebin
------------------------------------	-------------------------

E.3.5 STORYBOARD ONLY – DRAG/DROP

Change in/out points	Alt + drag
Change in/out points... audio only	Ctrl + Alt + drag
Slip and slide	Shift + Alt + drag
Slip and slide; audio only	Shift + Ctrl + Alt + drag

E.3.6 TIMELINE ONLY – DRAG/DROP

Change in and out points	Drag Crouton edge
Stretch (speed)	Alt + drag edge
Slip and slide	Shift + Alt + drag
Change length of Transition	Drag Transition edge
Change in and out points of Transition	Shift + drag Transition edge
Slip and slide Transition	Shift + Alt + drag Transition
Set current time marker	Shift + Click
Pan through project	Right Click + Drag Left/Right
Zoom in/out of project	Right Click + Drag Up/Down
Slowly pan or zoom project	Ctrl + Right Click + drag

E.3.7 IN/OUT POINTS

Mark In/Out Point	I / O (or E / R)
Mark In/Out then review	Shift + I / O
Clear In/Out Point	D / F (or Alt + I / O)
Clear Both In and Out Points	G (or Alt + P)
Go to In/Out Point	Q / W
Pre-roll before In/Out and play	Shift + Q / W
Adjust In point	Q + Left/Right Arrow
Adjust Out Point	W + Left/Right Arrow

(Note: if no clips are selected, the functions above apply to the clip nearest to Edit Line).

E.3.8 MISC

LED Normal/Time Remaining	;
LED Local/Total Time	Shift + ;
Fades... Insert Range	Alt + F
Toggle Overlay on and off	Y

E.3.9 TIMELINE TOOLS

Cut (Razor) at edit line	C
Cut to selected clip (Multicam)	Z
Constrain to vertical dragging only	V
Zoom and center Timeline view	=
Add Marker	M
Go to Previous/Next Marker	, / . (< > keys)
Toggle Timeline Ripple	T
Disable Timeline Ripple	Shift + T
Fit display to current clip	Enter key
Fit Whole Project	BackSlash
Center display around edit line	BackSpace

E.4 EDIT TEXT

E.4.1 FONT

Font Name (next/previous)	F5 (Shift +)
Font Size	F6 (Shift +)
Font Rotation	F7 (Shift +)
Font Tracking (Spacing)	F8 (Shift +)

E.4.2 TEXT

Increase/decrease Width by 5 pixels	Alt w (Shift +)
Increase/decrease Height by 5 pixel	Alt h (Shift +)
Increase/decrease Edge by 1 pixel	Alt k (Shift +)

Increase/decrease Italic by 1 pixel	Alt i (Shift +)
Increase/decrease Tracking by 1 pixel	Alt space (Shift +)
Next/Previous Font	Alt f (Shift +)

E.4.3 CLIPBOARD

Select All	Ctrl a
Deselect All	Ctrl d
Cut	Ctrl x
Copy	Ctrl c
Paste	Ctrl v
Delete	Delete
Redo	Ctrl y
Undo	Ctrl z

E.4.4 FILE

New CG Project	Ctrl n
Open CG Project	Ctrl o
Add Files	Alt + Insert
Save CG Project	Ctrl s
Save As... CG Project	Ctrl Shift s
Save Current Page	Ctrl Alt s
Save Current Page as Image	Alt Shift s

E.4.5 TEXT ENTRY

Selects One character	Shift + L/R Arrow
Moves cursor to beginning	Home
Moves cursor to end	End
Selects to the beginning	Shift + Home
Selects to the end	Shift + End
Deletes entire trailing word	Ctrl + Delete
Selects entire line	Shift + Up/Down Arrow
Selects One character	Shift + L/R Arrow
Kerning by letter	Alt + L/R Arrow

Move and scale	LMB (Left Mouse Button)
Rotate and Spacing	LMB + Shift
Multi-Select by area	LMB + Drag
Multi-Select Individual Objects	LMB + Ctrl

E.4.6 MODIFY TOOL

Nudge Up 1 pixel	Up Arrow
Nudge Down 1 pixel	Down Arrow
Nudge Left 1 pixel	Left Arrow
Nudge Right 1 pixel	Right Arrow

E.4.7 ALIGNMENT

Left Safety	Alt l
Center Safety Alignment	Alt c
Right Safety	Alt r
Bottom Safety Alignment	Alt b

E.4.8 LAYOUT

Align Left	Alt Shift l
Align Right	Alt Shift r
Align Top	Alt Shift t
Align Bottom	Alt Shift b
Align Horizontal Center	Alt Shift c
Align Vertical Center	Alt Shift v

E.4.9 PAGE

Add a new page	Ctrl Insert
Delete Current Page	Ctrl Shift Delete
Clone Current Page	Ctrl Shift Insert
Move up the Page list	PageUp
Move down the Page list	PageDown
Move to top of Page list	Ctrl PageUp

Move to bottom of Page list	Ctrl PageDown
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E.4.10 SHADOW

Add (Sub) 1 to Shadow Offset X	Alt x (Shift +)
Add (Sub) 1 to Shadow Offset y	Alt y (Shift +)
Shadow Type (up/down)	Alt F5 (Shift +)
Shadow Size (raise/lower)	Alt F6 (Shift +)
Shadow Angle (raise/lower)	Alt F7 (Shift +)
Shadow Softness (raise/lower)	Alt F8 (Shift +)

E.4.11 EDGE

Edge Type (up/down)	Ctrl F5 (Shift +)
Edge Size (raise/lower)	Ctrl F6 (Shift +)

E.4.12 VIEW

Toggle Safe Area guide on/off	Alt s
-------------------------------	-------

E.5 GENERAL

E.5.1 CLIPBOARD

Cut	Ctrl + X
Copy	Ctrl + C
Paste	Ctrl + V
Undo	Ctrl + Z
Redo	Ctrl + Y
Delete	Delete Key

E.5.2 FILES/FILEBIN

Open	Ctrl + O
------	----------

Save	Ctrl + S
Save As	Ctrl + Shift + S
Add Files	Ctrl + I
New Folder	Ctrl + N
File Properties	Ctrl + D
Back	Backspace
Forward	Shift + Backspace

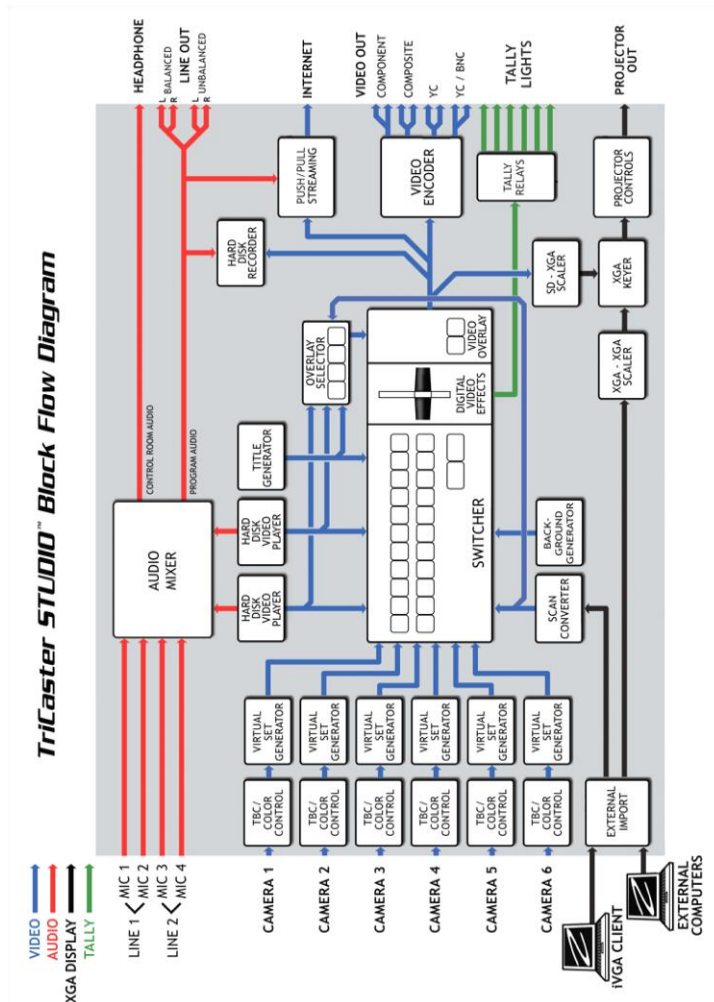
E.5.3 SELECTION

Select All	Ctrl + A
Deselect All	Ctrl + Shift + A
First Item	Home
Last Item	End
Previous Item	Left/Up Arrow
Next Item	Right/Down Arrow
Previous Item and Keep Current Selection	Ctrl + Left/Up
Next Item and Keep Current Selection	Ctrl + Right/Down
First Item and Keep Current Selection	Ctrl + Home
Last Item and Keep Current Selection	Ctrl + End
Select All Previous Items	Shift + Home
Select All Previous and Keep Current Selection	Ctrl + Shift + Home
Select All Following Items	Shift + End
Select All Following and Keep Current Selection	Ctrl + Shift + End

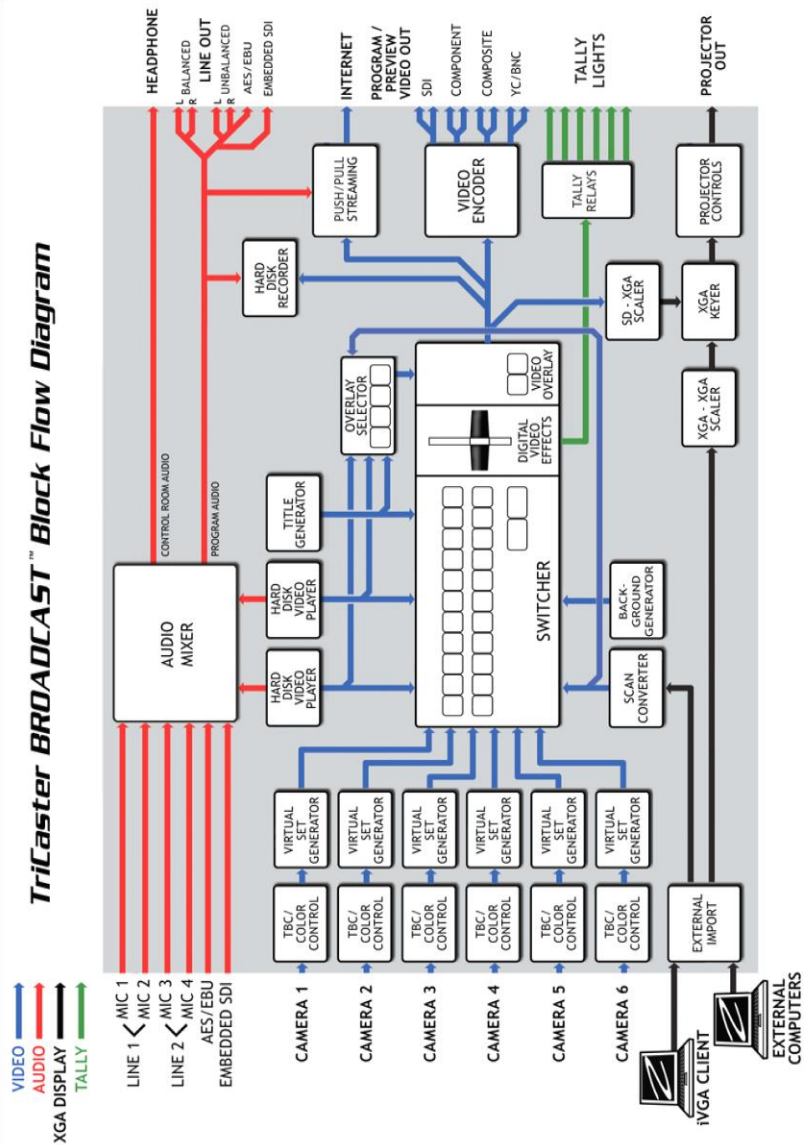
F SIGNAL FLOW

There are numerous TriCaster inputs and outputs for audio, video and VGA signals. Here are simplified flow diagrams to explain this for each model:

F.1 TRICASTER STUDIO



F.2 TRICASTER BROADCAST



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