harmonic

Spectrum™
ChannelPort™
RELEASE 7.2

Template Authoring Guide

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This guide may use some special symbols and fonts to call your attention to important information. The following symbols appear throughout this guide:

DANGER: The Danger symbol calls your attention to information that, if ignored, can cause physical harm to you.

CAUTION: The Caution symbol calls your attention to information that, if ignored, can adversely affect the performance of your Harmonic product, or that can make a procedure needlessly difficult.

LASER DANGER: The Laser symbol and the Danger alert call your attention to information about the lasers in this product that, if ignored, can cause physical harm to you.

NOTE: The Note symbol calls your attention to additional information that you will benefit from heeding. It may be used to call attention to an especially important piece of information you need, or it may provide additional information that applies in only some carefully delineated circumstances.

IMPORTANT: The Important symbol calls your attention to information that should stand out when you are reading product details and procedural information.

TIP: The Tip symbol calls your attention to parenthetical information that is not necessary for performing a given procedure, but which, if followed, might make the procedure or its subsequent steps easier, smoother, or more efficient.

In addition to these symbols, this guide may use the following text conventions:

Convention	Explanation
`Typed Command`	Indicates the text that you type in at the keyboard prompt.
<Ctrl>, <Ctrl>+<Shift>	A key or key sequence to press.
Links	The *italics in blue* text to indicate Cross-references, and hyperlinked cross-references in online documents.
Bold	Indicates a button to click, or a menu item to select.
`ScreenOutput`	The text that is displayed on a computer screen.
Emphasis	The *italics* text used for emphasis and document references.

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Contents

Introduction

Congratulations on choosing the Spectrum™ ChannelPort™ Integrated Channel Playout Platform. ChannelPort ensures the cost-effective deployment of new SD and HD television channels by integrating branding and master control switching with clip playback in a device that is fully compatible with all Spectrum components. ChannelPort fits seamlessly into existing production and playout infrastructures, reducing complexity and cutting the time it takes to launch new services. Rich multilayer graphics and dynamic text can be layered over programming, and support for a broad range of automation systems, as well as Emergency Alert System (EAS) support, offers you the freedom to employ the workflow of your choice.

This document provides the following in-depth information for using the Spectrum ChannelPort:

- Introduction (this section) provides the following topics:
  - *Spectrum System Documentation Suite*
  - *Technical Support*
- Chapter 1 *Installation and Configuration Overview* provides instructions for installing and configuring a ChannelPort.
- Chapter 2 *Installing and Using the Template Authoring Package* provides an overview and instructions for installing and using the Harmonic Template Authoring Package.
- Chapter 3 *Using Harmonic Templates* provides instructions for working with sample Harmonic templates to play on the ChannelPort.
- Chapter 4 *Using Custom Templates* provides instructions for creating custom templates to play on the ChannelPort.
- Chapter 5 *Creating Flash Videos and MPEG-4 Files for ChannelPort* provides instructions for creating templates encoded as .flv and .mp4 files.
- Chapter 6 *ChannelPort Authoring Guidelines* provides guidelines for authoring graphics to play on the ChannelPort.

For information on installing and using the ChannelPort tools, please refer to the *Spectrum ChannelPort Tools User Guide*.

Spectrum System Documentation Suite

The table below describes the documents which comprise the Spectrum System Documentation Suite. .

Spectrum (MediaDirector 2201, 2202, MediaCenter, MediaPort 5000, MediaPort 7000, ChannelPort)	
This document...	**Provides this information...**
Spectrum System Installation and Hardware Reference Guide	■ System installation ■ Software installation and upgrade details ■ Orientation to system components including MediaDirectors, MediaCenters, MediaPorts, ChannelPorts, and MediaStores ■ Troubleshooting system components ■ Specifications for system components

Spectrum System Protocol Reference Guide	■ Command sets and preroll parameters for controlling MediaDirectors ■ The Omneon implementation of FTP server
Spectrum Quick Reference Guides	■ Front and back panel views of Spectrum devices ■ LED assignments and legends
Spectrum ChannelPort Template Authoring Guide	ChannelPort template authoring
Spectrum ChannelPort Tools User Guide	Using ChannelPort tools
Spectrum Onboard Playout Control and PlayoutTool User Guide	■ Onboard Playout Control Overview ■ Using PlayoutTool
Spectrum Component Replacement Guide	Component replacement instructions for all Spectrum devices
Spectrum and MediaDeck Release Notes	Last minute information regarding a product release
Spectrum MediaDeck 7000	
This document...	**Provides this information...**
Spectrum MediaDeck 7000 User Guide	■ System installation ■ Upgrade instructions ■ Orientation to system components
Spectrum MediaDeck 7000 Installation Guide	System installation
Spectrum and MediaDeck Release Notes	Last minute information regarding a product release
Spectrum MediaDeck 7000 Read Me First	■ Passwords for downloading MediaDeck and SystemManager files ■ Instructions for obtaining and installing the license file for SystemManager ■ Installation overview
Spectrum (MediaDirector 2100, 2101, 2102, 2102B, MediaPort 1000, 3000, 4000, 6000 Series)	
This document...	**Provides this information...**
Omneon Spectrum System Getting Started Guide	■ System installation ■ Software installation and upgrade details
Omneon Spectrum System Hardware Orientation Guide	■ Orientation to system components including MediaPorts, and MediaStores ■ Troubleshooting system components ■ Specifications for system components
Spectrum System Protocol Reference Guide	■ Command sets and preroll parameters for controlling MediaDirectors ■ The Omneon implementation of FTP server
Spectrum Quick Reference Guides	■ Front and back panel views of Spectrum devices ■ LED assignments and legends
Omneon MediaDeck	
This document...	**Provides this information...**

Omneon MediaDeck User Guide	■ System installation ■ Upgrade instructions ■ Orientation to system components
Omneon MediaDeck Installation Guide	System installation
Spectrum and MediaDeck Release Notes	Last minute information regarding a product release
Omneon MediaDeck Read Me First	■ Passwords for downloading MediaDeck and SystemManager files ■ Instructions for obtaining and installing the license file for SystemManager ■ Installation overview

All items are packaged in self-extracting files and available for download from the Omneon FTP site at the following location: *ftp://ftp.omneon.com//updates/omneon/Current/Spectrum/*

- **Release Notes**: Spectrum_v7.2.0.0_ReleaseNotes.pdf
- **All other components of the Spectrum System Documentation Suite**: MediaDeckAndSpectrum-v7.2.0.0-Documentation.exe
- **For ChannelPort templates, tools, and documentation, as well as Onboard Playout Control tools and documentation**: ChannelPortTemplatesAndTools-7.2.0.0-SWandDoc.exe.

For Spectrum media and wrapper formats, refer to Spectrum_Media_and_WrapperFormats.pdf in the Spectrum System Documentation Suite.

For the SystemManager documentation, navigate to:

ftp://ftp.omneon.com/updates/omneon/current/SystemManager

SystemManager documents are packaged **SystemManager-v5.25.0.0-Documentation.exe**.

Acrobat ® Reader® is needed to view the product documentation. Download this for free from: **http://www.adobe.com**

All files on the Omneon Support Server are password protected. Contact Harmonic *Technical Support* if you need assistance with unlocking the files.

Locating the Latest Documentation on the Harmonic Website

The latest documentation can be found at *http://www.harmonicinc.com/documents-detail*.

Technical Support

For information on contacting Harmonic Technical support, refer to *Appendix A, Contacting the Technical Assistance Center*.

Useful Information when Contacting Technical Support

In order to assist Harmonic Technical Support, review the following information:

- **What version of firmware is installed on your system?**

From the **Home** tab, click the **Upgrade Firmware** icon in the left-hand column to display the **Upgrade Firmware** page. The firmware version for each device is shown in the **Current Firmware Version** column.

- **What version of SystemManager software is installed?**

From SystemManager, click the **Help** tab. The version is shown in the **Server Software** section of the page.

- **Which Windows operating system is running on the SystemManager client PC?**
  a. From Windows, click the **Start** button, and then click **Run**.
  b. In the **Open** field, type: winver, and then press **Enter** to open the **About Windows** dialog box, which shows the version number.
- **How much memory is installed on the SystemManager platform? (for example, 256 MB, 512 MB, or 1 GB)**
  a. From Windows, click the **Start** button, and then click **Run**.
  b. In the **Open** field, type: winver and then press **Enter** to open the **About Windows** dialog box. Look for the line that reads, "Physical memory available to Windows."
- **Please provide the manager.oda file from the SystemManager platform or client PC**

Harmonic Technical Support may request that you email the manager.oda file, which contains configuration information for your system. This file is located on the SystemManager platform at D:\Omneon\Manager\omdb, or if you are using a client PC with a single C: partition, it will be in the same directory on the C: drive.

- **What is the model and serial number of the hardware involved?**
  - For Spectrum and MediaDeck devices: from the **Home** tab, click the **Upgrade Firmware** icon in the left-hand column to display the **Upgrade Firmware** page. Both MediaDirectors and MediaDecks are listed in the **MediaDirectors** section. Find the Model Numbers and Serial Numbers listed in their respective columns.

    Scroll down to the **MediaPorts** section to view the Model Numbers and Serial Numbers for MediaPorts and MediaDeck Modules.
  - For Omneon MediaGrid Devices: Click the **Servers & Switches** icon in the left-hand column. From the Servers and Switches page, in the **Name** column, click the link for the Omneon MediaGrid device to open the **Properties** page for that device.
  - For ProXchange devices: Click the ProXchange Servers icon in the left-hand column. From the **Servers** page, in the **Name** column, click the link for the ProXchange device to open the **Properties** page for that device.
  - For ProBrowse devices: Click the ProBrowse Servers icon in the left-hand column. From the **Servers** page, in the **Name** column, click the link for the ProBrowse device to open the **Properties** page for that device.
  - For MAS devices: Click the MAS Servers icon in the left-hand column. From the Servers page, in the **Name** column, click the link for the MAS device to open the **Properties** page for that device.

For Spectrum Systems

- **What is the name of the Player that is being used?**

From SystemManager, click the **Player Configuration** link in the left-hand column, and then click the name of the MediaDirector or MediaDeck. The **Player List** page for that device appears. The names and status of all players are listed.

- **What file format and bit rate is the Player configured for? (for example, MPEG, DV, or IMX?)**
  a. From SystemManager, click the **Player Configuration** link in the left-hand column, and then click the name of the MediaDirector or MediaDeck. The **Player List** page for that device appears.

b. From the player list, click the **Properties** link to view all the details for a player.

- **If the problem is related to Ingest or Playout of a clip, what is the Clip ID involved?**

The clip name or clip ID should be indicated by whatever software application you are using to play or record video. For Omneon ClipTool, clip names are displayed in the clip management area of the ClipTool main window.

- **What brand of Automation, if any, is being used for control?**
- **Is the Automation using VDCP or API for communication control?**

Chapter 1
Installation and Configuration Overview

ChannelPort Installation Overview

The ChannelPort module can be installed in a MediaDeck 7000 or a MediaPort 7000. When the ChannelPort module is installed in a MediaDeck 7000 or a MediaPort 7000, it can be connected to an automation system and an Emergency Alert system (EAS).

For information on installing a ChannelPort module in a MediaDeck 7000, refer to the *MediaDeck 7000 User Guide*.

For information on installing a ChannelPort module in a MediaPort 7000 as part of a Spectrum System, refer to the *Spectrum Installation and Hardware Reference Guide*.

ChannelPort Configuration Overview

The ChannelPort module has two channels that can play graphics. You may want to configure the first channel to use FXTool to preview graphics in real time and PreviewTool to preview graphics on a timeline. You may want to configure the second channel for live, on-air graphics playout. The channel you dedicate to FXTool and PreviewTool cannot play graphics live on air.

PreviewTool works in coordination with a ChannelPort Playout Channel running on a Spectrum video server that you configure using SystemManager. PreviewTool uses the Playout Channel to retrieve clips from the clips directory (named “clip.dir” by default) and templates from the graphics directory (named “gfx.dir” by default) on the Spectrum video server. When a ChannelPort channel is configured for live, on-air graphics playout, an automation system retrieves playout information from the ChannelPort.

Spectrum software release 7.2 introduces Spectrum Onboard Playout Control (OPC). OPC is an optional, licensed Spectrum system feature that provides unattended playout of clips and graphics driven by a ChannelPort channel's traffic schedule. OPC controls the Playout Channel and graphics plane of a Spectrum system, but it is not an automation system: each instance of OPC controls only the ChannelPort channel for which it has been configured.

The following sections provide an overview of the ChannelPort configuration steps:

- *Configuring ChannelPort to Preview Graphics with FXTool and PreviewTool*
- *Configuring ChannelPort to Play Graphics Live On Air*
- *Configuring a ChannelPort Channel for Onboard Playout Control*
- *Verifying and Creating the Graphics Directory on the Video Server*

Configuring ChannelPort to Preview Graphics with FXTool and PreviewTool

Please read the following configuration overview before using ChannelPort to preview graphics with FXTool and PreviewTool.

1. Refer to the following chapters in this guide for information on creating graphic templates that can be played on the ChannelPort. Refer to the *Spectrum ChannelPort Tools User Guide* for instructions on installing and using FXTool and PreviewTool.

2. If you are using software release 7.0.0.0, refer to *Creating the Graphics Directory on the Video Server* for instructions on creating the graphics directory (gfx.dir). If you have upgraded to software release 7.1.0.0, gfx.dir is created automatically.
3. In SystemManager, create a player and attach it to the ChannelPort. Refer to "Player Configuration" in the *System Manager User Guide* for instructions.
4. In SystemManager, activate the player you attached to the ChannelPort. Refer to "Changing the Player State: Activating and Deactivating, Enabling and Disabling" in the *SystemManager User Guide* for instructions.
5. In SystemManager, configure the ChannelPort channel. Refer to "Configuring a ChannelPort Channel" in the *SystemManager User Guide* for instructions.
6. In SystemManager, configure the ChannelPort Playout Channel. Refer to "Configuring a Playout Channel" in the *SystemManager User Guide* for instructions.
7. Configure FXTool. Refer to the *Spectrum ChannelPort Tools User Guide* for instructions.
8. Configure PreviewTool. Refer to *Spectrum ChannelPort Tools User Guide* for instructions.

Configuring ChannelPort to Play Graphics Live On Air

Please read the following configuration overview before configuring ChannelPort to play graphics live on-air.

1. Refer to the following chapters in this guide for information on creating graphic templates that can be played on the ChannelPort. Refer to the *Spectrum ChannelPort Tools User Guide* for instructions on installing and using FXTool and PreviewTool.
2. If you are using software release 7.0, refer to *Creating the Graphics Directory on the Video Server* for instructions on gfx.dir. If you have upgraded to software release 7.1.0.0, gfx.dir is created automatically.
3. In SystemManager, create a player and attach it to the ChannelPort. Refer to "Player Configuration" in the *System Manager User Guide* for instructions.
4. In SystemManager, activate the player you attached to the ChannelPort. Refer to "Changing the Player State: Activating and Deactivating, Enabling and Disabling" in the *SystemManager User Guide* for instructions.
5. In SystemManager, configure the ChannelPort channel. Refer to "Configuring a ChannelPort Channel" in the *SystemManager User Guide* for instructions.
6. If you are connecting ChannelPort to an EAS, refer to "Configuring a ChannelPort Channel" in the *SystemManager User Guide* for instructions.
7. If your automation system connects to the ChannelPort via serial port, configure the serial port settings. Refer to "Configuring a ChannelPort Channel" in the *SystemManager User Guide* for instructions.
8. If your automation system connects via a network connection, identify the port number using *Table 1–1*. You will need this port number to configure your automation system.

Configuring a ChannelPort Channel for Onboard Playout Control

Please read the following configuration overview before configuring a ChannelPort channel for Onboard Playout Control.

1. Refer to the following chapters in this guide for information on creating graphic templates that can be played on the ChannelPort. Refer to the *Spectrum ChannelPort Tools User Guide* for instructions on installing and using FXTool and PreviewTool.
2. In SystemManager, create the player you wish to use for OPC and configure it to use "Harmonic Playout" for Control. Refer to "Initial Player Configuration" in the *SystemManager User Guide* for instructions.

3. In SystemManager, attach the player to the ChannelPort and then activate it. Refer to "Attaching Players" and "Changing the Player State: Activating and Deactivating, Enabling and Disabling" in the *SystemManager User Guide* for instructions.
4. In SystemManager, configure the ChannelPort channel. Refer to "Configuring a ChannelPort Channel" in the *SystemManager User Guide* for instructions.
5. If you are connecting ChannelPort to an EAS, refer to "Configuring a ChannelPort Channel" in the *SystemManager User Guide* for instructions.
6. In SystemManager, enable the Traffic and Billing service for the corresponding video server. Refer to "Enabling the Traffic and Billing Service" in the *SystemManager User Guide*.
7. In SystemManger, configure the Playout Channel for Onboard Playout Control by selecting "Playout" for the Channel Type on the Playout Channel Properties page. Configure other Playout Channel settings as needed. Refer to "Configuring a Playout Channel" in the *SystemManager User Guide*.
8. If you are using the Media Fetch service, enable Media Fetch on the Playout Channel Properties page and then configure the Media Fetch settings. Refer to "Configuring the Media Fetch Service" in the *SystemManager User Guide* for instructions.
9. Refer to the *Spectrum Onboard Playout Control and PlayoutTool User Guide* for information about creating playlists and installing and using the PlayoutTool.
10. Download and install PlayoutTool. Refer to "Installing PlayoutTool" *Chapter 3, Installing PlayoutTool* for instructions.

Determining a ChannelPort Port Number

If you are using a ChannelPort to preview graphics with FXTool or using it with an automation system, you will need to identify the port number for the ChannelPort channel you wish to use. Note that FXTool and automation systems use different protocols—FXTool uses "Network Automation" and most automation systems use "Serial Automation." Refer to *Table 1–1* to identify the necessary port for use with FXTool or automation.

If your ChannelPort module is connected to a Spectrum MediaDeck 7000, the module on the left (when looking from the back) is com 0, and the module on the right is com 1. If you are using a MediaCenter or MediaDirector, in SystemManager, navigate to the **Properties** page for your video server, and then scroll down to the **Private Ethernet Interfaces** section to view the "com" label for the associated Ethernet port. For details, refer to "Private Ethernet Interfaces" in the *SystemManager User Guide*.

Each ChannelPort module supports two channels (A and B). Once you know the Ethernet port that your ChannelPort module is connected to, and the channel that you will be using, refer to *Table 1–1*.

Table 1–1: ChannelPort Port Numbers

Module IP	ChannelPort Channel	Port Number for FXTool	Port Number for Automation
com 0	A	9100	9000
com 0	B	9101	9001
com 1	A	9102	9002
com 1	B	9103	9003
com 2	A	9104	9004
com 2	B	9105	9005
com 3	A	9106	9006
com 3	B	9107	9007
com 4	A	9108	9008
com 4	B	9109	9009
com 5	A	9110	9010
com 5	B	9111	9011
com 6	A	9112	9012
com 6	B	9113	9013
com 7	A	9114	9014
com 7	B	9115	9015
com 8	A	9116	9016
com 8	B	9117	9017
com 9	A	9118	9018
com 9	B	9119	9019
com 10	A	9120	9020
com 10	B	9121	9021
com 11	A	9122	9022
com 11	B	9123	9023
com 12	A	9124	9024

Table 1–1: ChannelPort Port Numbers

Module IP	ChannelPort Channel	Port Number for FXTool	Port Number for Automation
com 12	B	9125	9025
com 13	A	9126	9026
com 13	B	9127	9027
com 14	A	9128	9028
com 14	B	9129	9029
com 15	A	9130	9030
com 15	B	9131	9031

Verifying and Creating the Graphics Directory on the Video Server

The graphics directory (gfx.dir) is where you store the graphic templates you have authored to play on the ChannelPort. The ChannelPort is configured to look for a folder called "gfx.dir" in your video server file system when it retrieves graphic templates for preview or play.

Verifying the Graphics Directory on the Video Server

With software release 7.1.0.0, gfx.dir is created automatically in the video server file system when a ChannelPort is installed in a Spectrum system.

If you want your graphics directory to have a name other than "gfx.dir," refer to *Renaming the Graphics Directory Folder (Optional)* for instructions.

Creating the Graphics Directory on the Video Server

With software release 7.0.0.0, gfx.dir is not created automatically in the video server file system. You must manually create gfx.dir in your file system.

To create gfx.dir:

1. From SystemManager, click the **Disk Utilities** icon in the left-hand column to open the **Disk Utilities** page.
2. From the **Disk Utilities** page, click the hyperlink for your video server to open the corresponding **Disk Utilities** page.
3. In the **Logical View** area, click **Explore Filesystemfile://**..., as shown in *Figure 1–1*.

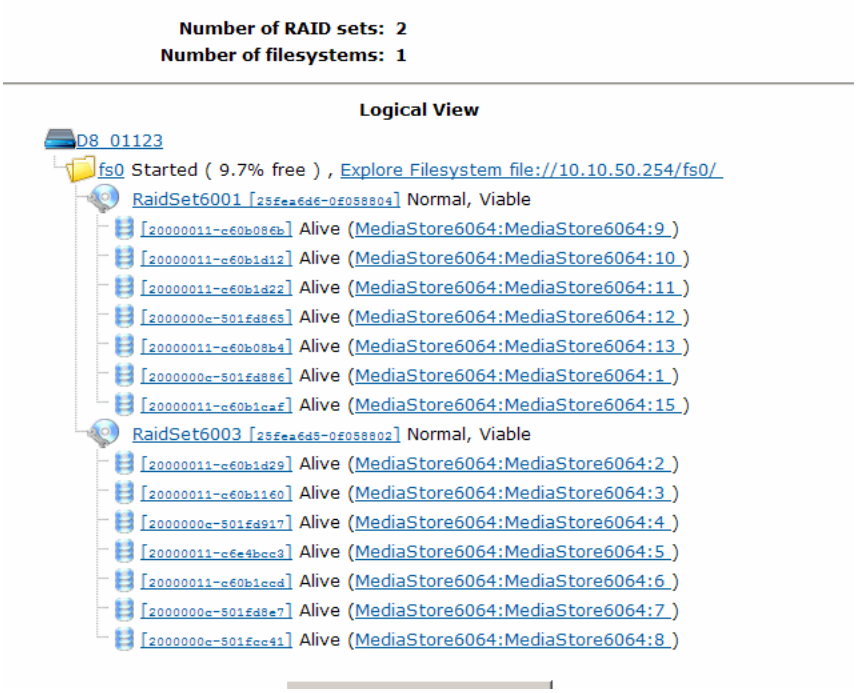


Figure 1–1: FileSystem, Logical View

4. When prompted, enter the user name and password for your video server file system. The root directory of the video server file system will appear in a new Explorer window.

NOTE: If the root directory does not appear or a message appears indicating the browser is unable to connect, you may need to add the IP address of your SystemManager to the list of trusted sites in Internet Explorer.

- From Internet Explorer, click **Tools** > **Internet Options** > **Security** > **Trusted Sites** > **Sites** to open the **Trusted sites** dialog box.
- In the **Add this website to the zone** field, enter your SystemManager IP address (preceded by "http://"), and then click **Add.**
- Click **Close** and then click **OK**. Retry the Explore Filesystem link.

5. Using Windows Explorer, create a new folder named **gfx.dir** on the root directory of the file system.

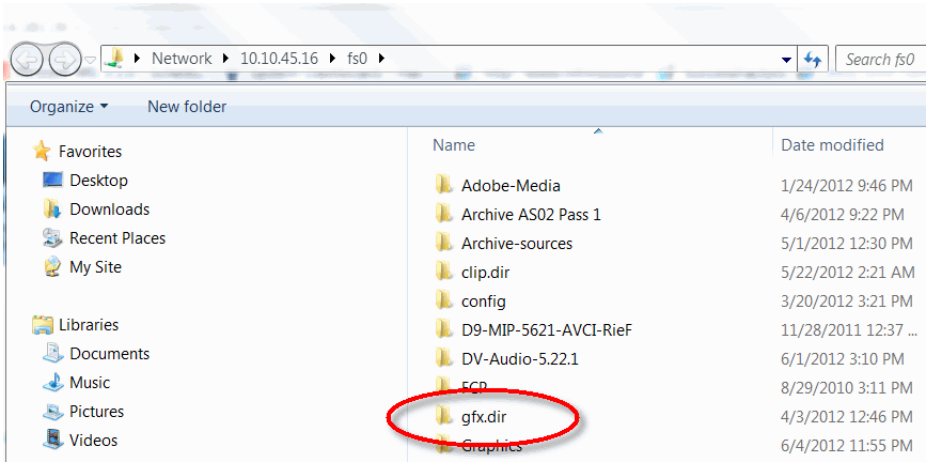


Figure 1–2: Creating gfx.dir

Renaming the Graphics Directory Folder (Optional)

If you wish to name the graphics directory something other than gfx.dir, you must modify the properties page for each ChannelPort channel to direct it to the new location for your graphic templates.

IMPORTANT: SystemManager does not verify if graphics directory indicated on the ChannelPort Channel Properties page exists on the video server file system. Therefore, it will not provide any error messages if the directory does not exist.

To configure the new graphics directory folder name in SystemManager:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the link or icon for your ChannelPort to open the **ChannelPort Properties** page.
3. Click the **ChannelPort Channel A** or **ChannelPort Channel B** button to open the properties page for that channel.
4. In the **Effect Configuration** area, locate the **Effects Folder** field, and type the new name of the graphics directory.
5. Click **Apply**, and then click **Done**.
6. On the **ChannelPort Properties** page, click **Configure Channel B**, and repeat *Step 3* through *Step 5*.

Chapter 2
Installing and Using the Template Authoring Package

This Chapter includes:

About the Template Authoring Package

The Template Authoring Package contains all the files you need to make the graphics you author playable on the ChannelPort. The Template Authoring Package can be downloaded as a .zip file at *ftp://ftp.omneon.com//updates/omneon/current/Spectrum/7.1.0.0*.

The Template Authoring Package contains the following folders:

- **Project**: Contains the ActionScript files written by Harmonic that are needed to play a template on the ChannelPort.
- **Samples**: Contains the **Sources** folder and the **Templates** folder.
  - **Sources**: Contains .fla files of the sample Harmonic templates and blank Harmonic templates for each raster size supported by ChannelPort.
  - **Templates**: Contains .swf files of the sample Harmonic templates for each raster size supported by ChannelPort.
- **Widgets**: Contains the Harmonic Widget Library. Harmonic widgets are Flash symbols created by Harmonic for building templates that can be played on the ChannelPort. For more information, refer to *About Harmonic Widgets*.

Installing the Template Authoring Package

For ease of use, Harmonic recommends that you store the Template Authoring Package in the same location you store your Flash projects.

To install the Template Authoring Package:

1. Navigate to *ftp://ftp.omneon.com//updates/omneon/current/Spectrum/7.1.0.0* and download the **ChannelPortTemplatesAndTools-v7.1.0.0-SWandDoc.exe**.

   Along with the Spectrum firmware, the **ChannelPortTemplatesAndTools-v7.1.0.0-SWandDoc.exe** contains the ChannelPort Template Authoring Package and installers for the FXTool and FXTool Help and PreviewTool and PreviewTool Help. Refer to the *Spectrum ChannelPort Tools User Guide* for more information on installing FXTool and PreviewTool.
2. Unzip the **ChannelPort-template-authoring.zip** file, and set a destination path on your computer.

About Creating Templates

The Template Authoring Package contains blank Harmonic .fla files and sample Harmonic .fla files for each raster size supported by ChannelPort. Refer to *Getting Started with Harmonic Templates* in *Chapter 3, Using Harmonic Templates* for more information about using Adobe® Flash® Professional to turn a Harmonic .fla file into a .swf file that will play on the ChannelPort. If you want to create a custom .swf file for the ChannelPort that does not use one of the Harmonic .fla files, you must first properly configure Flash Professional and the ActionScript settings for your project. Refer to *Setting Up a Custom Template* in *Chapter 4, Using Custom Templates* for more instructions.

The ChannelPort also supports graphic templates encoded as Flash Video (.flv) files with alpha (transparency) and MPEG-4 (.mp4) files using Adobe Media Encoder or Adobe After Effects®. Refer to *Chapter 5, Creating Flash Videos and MPEG-4 Files for ChannelPort* for more information.

Supported File Types

The ChannelPort supports the following file types:

Graphics

- .swf (Shockwave Flash Movie)
- .flv (Flash Video)
- .mp4 (MPEG-4)
- .png (Portable Network Graphic)
- .jpg (Joint Photographic Experts Group)
- .tga (Targa Graphic)
- .gif (Graphical Interchange Format)
- .bmp (Bitmap Image)
- .tif (Tagged Image File)

NOTE: JPEG file compression and planar formats within .tif files are not supported by ChannelPort.

Audio

- .wav (Waveform Audio File Format)
- .aiff (Audio Interchange File Format)

  For best performance, Harmonic recommends the following audio settings: 48 KHz, 24-bit, up to 16 channels.

Template Raster Sizes

The blank .fla files, blank .swf files, sample Harmonic .fla files, and Harmonic .swf files are available in the following raster sizes:

- 1080i60, 1920 × 1080
- 1080i50, 1920 × 1080
- 720p60, 1280 × 720
- 720p50, 1280 × 720

- 625-16 × 9, 1024 × 576
- 625-4 × 3, 768 × 576
- 525-16 × 9, 864 × 486
- 525-4 × 3, 648 × 486

About Blank Harmonic Templates

You should use a blank Harmonic template to create a project from scratch. A blank Harmonic template is a .fla file that has already been configured with the necessary ActionScript settings but contains no objects on the Flash stage. After you copy a blank .fla file to the Project folder in the Template Authoring directory, you can open it in Flash Professional and edit, or add visual elements to, the template, and then publish it as a .swf file that can be played on the ChannelPort. A blank template is provided for each raster size supported by ChannelPort.

About Sample Harmonic Templates

The Sources folder, located in the Template Authoring Package, contains the sample Harmonic .fla files described in this section. After you copy a sample .fla file to the Projects folder, you can publish it in Flash as a .swf file and then play it on the ChannelPort. Each sample Harmonic .fla file is available in each raster size supported by ChannelPort.

DVE Squeezeback Template

The following sample Harmonic template contains the Harmonic DVE widgets and a graphics folder that contains several .png files and a collection of movie clips. For a complete overview and instructions on creating DVE templates for the ChannnelPort, refer to *Chapter 6, DVE Authoring for ChannelPort*

The DVE Squeezeback template begins with a full-screen video, and then “squeezes” the video back toward the top-left portion of the screen. As the video is “squeezed back” a border and the Harmonic logo slide in to frame the video.

Figure 2–1 shows a 1280 × 720 affected by the sample Harmonic DVE Squeezeback Template.

Figure 2–1: DVE Squeezeback Template

The DVE Squeezeback template contains several layers of Flash animation, as shown in *Figure 2–4*.

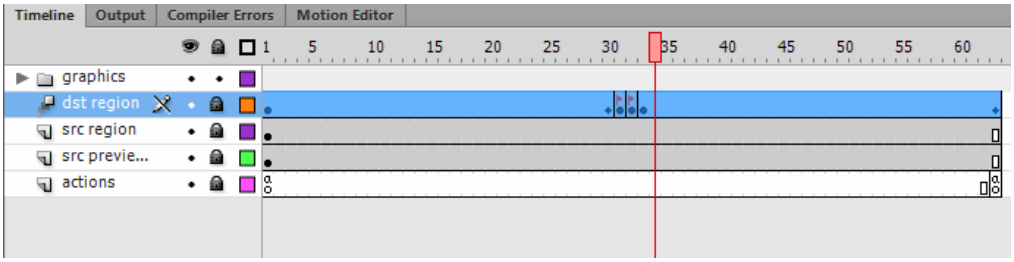


Figure 2–2: DVE Squeezeback Flash Layers

Dynamic Text Field Templates

The following sample Harmonic templates contain Harmonic Text Field widgets that can be updated after the template has been loaded on the ChannelPort. Refer to *Working with Harmonic Text Field Widgets* in *Chapter 3, Using Harmonic Templates* for more information on Dynamic Text fields.

- Dynamic Text Banner

  Figure 2–3 shows the second text field of the Dynamic Text Banner (or Now, Next, Later) template.

Figure 2–3: Dynamic Text Banner Template

The Dynamic Text Banner template contains several layers of Flash animation, as shown in *Figure 2–4*.

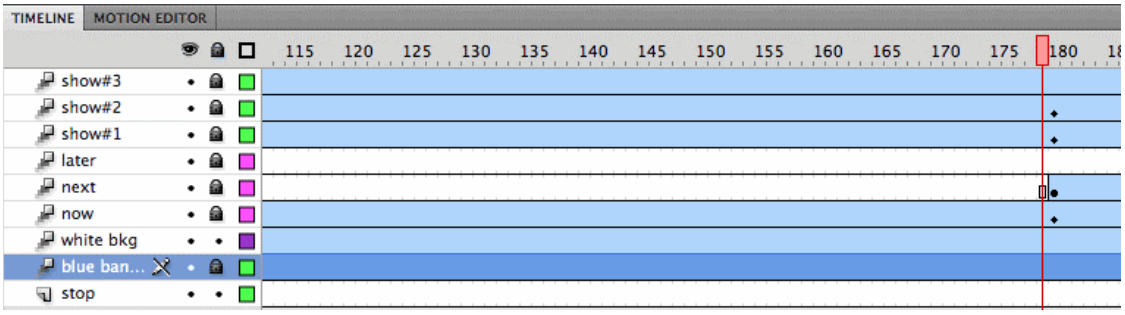


Figure 2–4: Dynamic Text Banner Flash Layers

- Full-page Dynamic Text Banner

  Figure 2–5 shows the Full-Page Dynamic Text Banner template. This template contains multiple instances of the Harmonic Text Field widget and a uses a .jpeg image file for the background. Refer to *Naming Multiple Instances of a Dynamic Text Field* for more information on working with multiple instances of the Harmonic Text Field widget.

Figure 2–5: Full-Page Dynamic Text Banner Template

In the Full-page Dynamic Text Banner template, the dynamic text field containing the time animates from the left, and the dynamic text field animates from the right.

The Full-page Dynamic Text Banner template contains several layers of Flash animation, as shown in *Figure 2–6*.

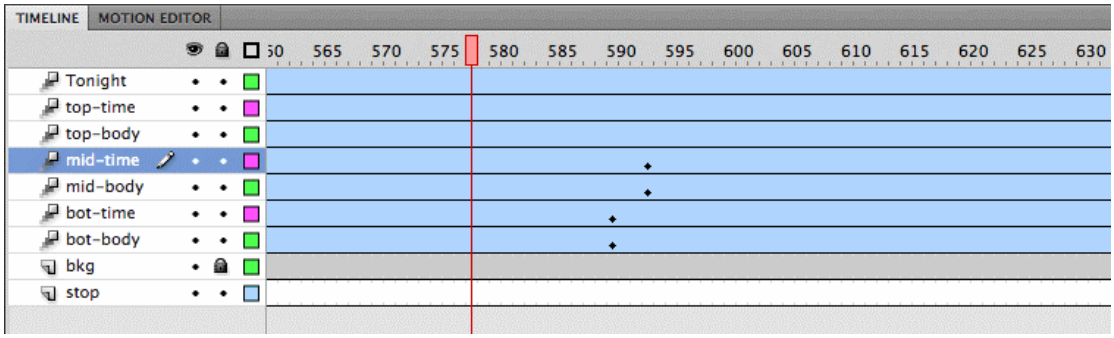


Figure 2–6: Full-page Dynamic Text Banner Flash Layers

Countdown Template

The following sample Harmonic template contains the Harmonic Text Field widget and the Harmonic Countdown widget. After the template is loaded on the ChannelPort, a numeric value, in seconds, can be entered in the text field of the template. When the countdown is complete, the template will hide its contents.

Figure 2–7: Countdown Template

The Countdown template contains several layers of Flash animation, as shown in *Figure 2–8*.

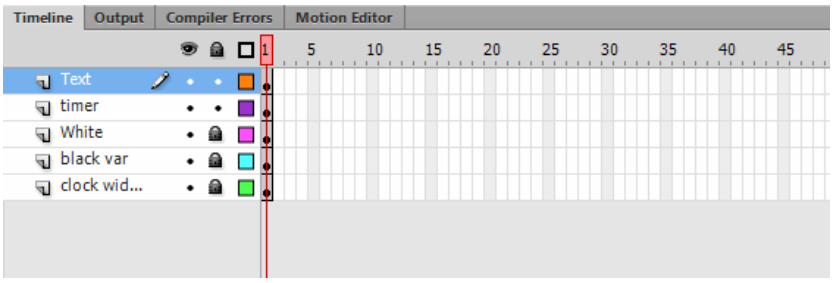


Figure 2–8: Countdown Template Flash Layers

Regulatory Templates

The following sample Harmonic templates are regulatory templates that contain a single .png image file that has been placed on the Flash stage. Each regulatory template uses only one static layer in Flash.

Figure 2–9 shows the TV-Y template.

Figure 2–9: TV-Y Template

In addition to the TV-Y template, the Template Authoring Package contains the following regulatory templates:

- Closed Captioning
- TV-14
- TV-MA
- E/I (Educational and Informational)

Emergency Alert System (EAS) Templates

The following sample Harmonic templates are EAS templates that contain the Harmonic TextScroll Widget. Each regulatory template uses only one static layer in Flash. For more information on connecting a ChannelPort to an EAS, refer to "Connecting a ChannelPort to an Emergency Alert System" in the *MediaDeck 7000 User Guide* and the *Spectrum Installation Hardware and Reference Guide*.

Figure 2–10 shows the EAS Warning template.

Figure 2–10: EAS Template

In addition to the EAS Warning template, the Template Authoring Package contains the following EAS templates:

- EAS Watch
- EAS Advisory

NOTE: EAS templates are placed on graphics layer 8 (the highest layer) to ensure they are not obscured by other graphics. If your ChannelPort is configured to support an EAS, do not use layer 8 for other graphics. Refer to *ChannelPort Tools User Guide* for instructions on previewing graphics.

Pillar Boxes Template

The following sample Harmonic template is a Pillar Boxes template that contains two PNG image files (one for the left side and one for the right side of the screen) that have been manipulated on the Flash stage. The pillar box template uses one static layer in Flash.

Figure 2–11 shows the Pillar Boxes template.

Figure 2–11: Pillar Boxes Template

Logo Loop Templates

The Template Authoring Package contains two examples of the Logo Loop template. One Logo Loop template contains a Flash video, and the other contains a sequence of .png image files that have been placed on the Flash stage. The logo loop template uses one layer of animation in Flash.

Figure 2–12 shows a Logo Loop template in which the blue animation that traces the letters of the Harmonic logo has been captured toward the end of the loop.

Figure 2–12: Logo Loop Template

When played on the ChannelPort, the animation will continue to loop until it is stopped.

Three-point Animation Template

The following sample Harmonic template is a Three-point Animation template that contains a Flash video. To create a loop on a three-point animation template, refer to *Configuring Three-Point Animations* for instructions.

The Three-point Animation template has an intro section, a loop section, and an outro section that display the following animations:

1. The laser animation slides in from the right of the screen.
2. When the laser animation reaches the left boundary of the template, it reverses its direction, and the Harmonic logo appears on the screen.
3. The laser animation slides in from the right of the screen again. When it reaches the left boundary of the template, it reverses direction, and the Harmonic logo disappears from the screen.

Figure 2–13 shows the Three-point Animation template in the second part of its animation.

Figure 2–13: Three-Point Animation Template

The Three-Point Animation template contains several layers of Flash animation, as shown in *Figure 2–14*.

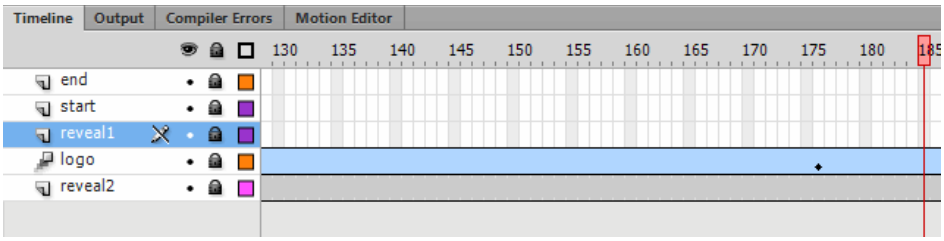


Figure 2–14: Three-Point Animation Flash Layers

RSS News Ticker

The following sample Harmonic template is a RSS News Ticker template that contains the Harmonic Clock widget, the Harmonic Text Scroll widget, and a static .png image file that have been placed on the Flash stage.

You can update the text field of the RSS News Ticker template when you preview the template using FXTool or Preview Tool. Refer to the *Spectrum ChannelPort Tools User Guide* for further instructions.

Figure 2–15 shows the RSS News Ticker sample template.

Figure 2–15: RSS News Ticker Template

The RSS News Ticker template contains several layers of Flash animation, as shown in *Figure 2–16*.

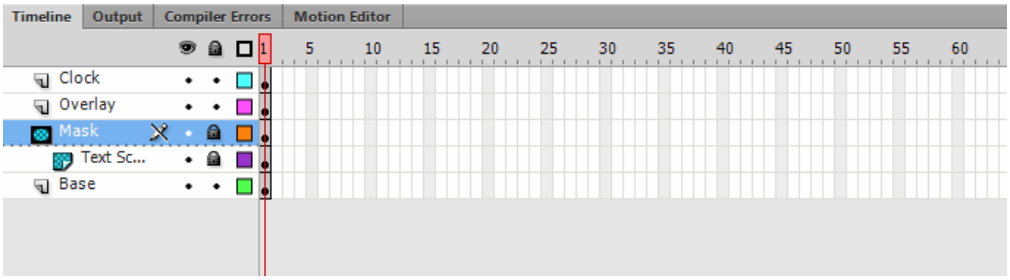


Figure 2–16: RSS News Ticker Flash Layers

Live Audio Voiceover Template

The Harmonic live audio voiceover template contains the Harmonic Live Audio Voiceover widget. This template is intended for use only with live audio voicover and not with recorded audio. When this template is faded up, it allows the input of the AES channel to supercede any other audio that is active on the ChannelPort.

The audio voiceover template may be used in conjuction with the Harmonic EAS templates.

About Harmonic Widgets

The Harmonic Template Widget Library contains Flash symbols created by Harmonic that can be added to Flash projects being authored for the ChannelPort.

Once the widget is in your Flash project library, it can be dragged onto the stage and manipulated in your project. For example, you can re-size the widget or change its font, text size, or text color.

After you save your project in the **Project** folder in the Template Authoring Package, you can edit the ActionScript code of the widget to customize its behavior.

Refer to *Applying a Widget to Your Flash Project* in *Chapter 3, Using Harmonic Templates* for instructions on using Harmonic widgets.

Harmonic Clock

The Harmonic Clock widget contains ActionScript code that will update the clock accordingly once it is placed in a Flash project.

Harmonic Text Field

The Harmonic Text Field widget contains Actionscript code that allows the text field to be updated dynamically (for example, via an automation system)when the template is running on a ChannelPort . Refer to *Working with Harmonic Text Field Widgets* in *Chapter 3, Using Harmonic Templates* for more information.

Harmonic Text Scroll

The Harmonic Text Scroll widget contains the same ActionScript code as the Harmonic Text Field widget, but also contains Actionscript that scrolls the text across the text field. The speed and orientation of this scroll (right-to-left, left-to-right) can be controlled through the ActionScript code.

Harmonic Advanced Text Field and Advanced Text Scroll

The Harmonic Advanced Text Field and Advanced Text Scroll widgets should be used for languages that contain complex characters or right-to-left or bi-directional text. These widgets contain ActionScript code that supports Adobe's Text Layout Framework. Refer to *Using the Harmonic Advanced Text Widgets* in *Chapter 3, Using Harmonic Templates* for more information.

Harmonic Countdown

The Harmonic Countdown widget contains ActionScript code that allows a text field to be updated (for example, via an automation system) with a numeric value, in seconds, that will countdown to zero when the template is loaded on the ChannelPort, and the layer is faded up.

Refer to *Customizing the Widget's ActionScript* in *Chapter 3, Using Harmonic Templates* or *Customizing the Widget's ActionScript* in *Chapter 4, Using Custom Templates*.

IMPORTANT: Editing the ActionScript is an advanced procedure, and errors could make the template incapable of being played on the ChannelPort. Some widgets contain commentary for editing the ActionScript code correctly.

Harmonic Voiceover

This widget contains ActionScript code that controls the live audio voiceover mixer.

Harmonic DVE Template Widgets

The Harmonic DVE template widgets contain ActionScript code that provides various functionality for the DVE template. For a complete overview and instructions on creating DVE templates for the ChannnelPort, refer to *Chapter 6, DVE Authoring for ChannelPort*

Harmoninc DVE Src Preview Region

This widget contains ActionScript code that represents the input to the DVE in the Flash Desktop environment.

Harmonic DVE Src Region

This widget contains ActionScript code that controls the crop functionality of the DVE.

Harmonic DVE Dst Region

This widget contains ActionScript code that controls the scale and position functionality the DVE.

Chapter 3
Using Harmonic Templates

This chapter includes the following sections:

Getting Started with Harmonic Templates

You can use the blank Harmonic .fla files or the sample Harmonic .fla files to author graphics that will play on the ChannelPort. When you begin a new Adobe® Flash® Professional project with a blank Harmonic .fla file or a sample Harmonic .fla file, you must copy the .fla file to the **Project** folder in the Template Authoring Package. The **Project** folder contains the necessary ActionScript code that allows your project to be played on the ChannelPort. Before beginning a new project, be sure to choose the appropriate raster size for your project.

NOTE: Before you start a project using Harmonic templates, please read *Chapter 7, ChannelPort Authoring Guidelines* for information on authoring graphics that play correctly on the ChannelPort.

If you wish to create a custom template that does not use one of the Harmonic .fla files, please refer to *Chapter 4, Using Custom Templates* for instructions.

Using a Blank HarmonicTemplate

The Template Authoring Package contains blank Harmonic .fla files for building a template from scratch. After a blank Harmonic .fla file is published as a .swf file and copied to the graphics directory (gfx.dir) on the video server, it can be played on the ChannelPort. Refer to *About Blank Harmonic Templates* in *Chapter 2, Installing and Using the Template Authoring Package* for more information about blank Harmonic templates.

IMPORTANT: Before using a blank Harmonic .fla file, verify your raster size and frame rate.

To use a blank template:

1. From the Template Authoring Package, open the **Samples** folder.
2. Open the **Sources** folder.
3. Open the folder for the raster size and frame rate you want to work in, and copy the blank .fla file from that folder into the **Project** folder.
4. In Flash Professional, open the blank .fla file you copied to the **Project** folder.
5. Add visual elements to the template as desired.
6. Save your file.

CAUTION: Do not use the following characters in the file name of your template: \ / " % #.

7. Click **File** > **Publish** to publish your file as a .swf file.

   The published .swf file will be saved in the **Project** folder.
8. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server.

After you copy the .swf file to the graphics directory (gfx.dir) on the video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

Using a Sample Harmonic Template

The Template Authoring Package contains sample Harmonic .fla files you can view or modify for a template. After a sample Harmonic .fla file is published as a .swf file and copied to the graphics directory (gfx.dir) on the video server, it can be played on the ChannelPort. Refer to *About Sample Harmonic Templates* in *Chapter 2, Installing and Using the Template Authoring Package* for more information about sample Harmonic templates.

IMPORTANT: Before using a sample Harmonic template, verify your raster size and frame rate.

Sample Harmonic templates come in either a single file or multiple files within a folder (for example, the dynamic text field templates contain multiple files). Make sure when using a sample Harmonic template with multiple files, that all the files within the folder are copied to the **Project** folder in the Template Authoring Package.

To use a sample Harmonic template:

1. From the Template Authoring package, open the **Samples** folder.
2. Open the **Sources** folder.
3. Open the folder for the raster size and frame rate you want to work in, and copy the sample .fla file from that folder to the **Project** folder.

IMPORTANT: If the .fla file is in a folder with other files that support it, you must copy all the supporting files to the Project folder as well.

4. In Flash Professional, open the sample .fla file you copied to the **Project** folder.
5. View, edit, or add visual elements to the template as desired.
6. Save your file.

CAUTION: Do not use the following characters in the file name of your template: \ / " % #.

7. Click **File** > **Publish** to publish your file as a .swf file.

   The published .swf file will be saved to the **Project** folder.
8. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server.

After you copy the .swf file to the graphics directory (gfx.dir) on your video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

Applying a Widget to Your Flash Project

The Harmonic Template Widget Library contains Flash symbols created by Harmonic that can be added to Flash projects being authored for the ChannelPort.

Refer to *About Harmonic Widgets* in *Chapter 2, Installing and Using the Template Authoring Package* for more information about the Harmonic Template Widget Library.

To apply a widget to an existing project:

1. Click **File** > **Open** and open the **Template Authoring Package**.
2. Open the **Widgets** folder, and open the **HarmonicTemplateWidgetLibrary**.
3. In Flash, if the **Library** tab is not available, click **Window** > **Library**.
4. Select the **Library** tab.
5. Select **HarmonicTemplateWidgetLibrary.fla** from the library drop-down menu, as shown in *Figure 3–1*.

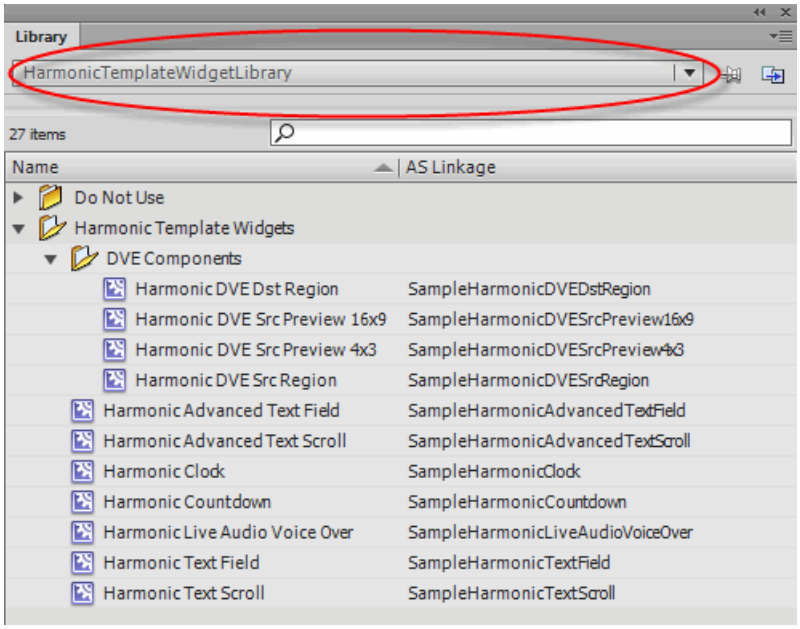


Figure 3–1: Library Tab Drop-Down Menu

6. Copy the Harmonic widget you need from the **Widget Library.**
7. Open the **Library** drop-down menu to open your Flash project library.
8. Paste the Harmonic widget into your Flash project library.

   Once the widget is in your Flash project library, it can be dragged onto the stage and manipulated in your project. For example, you can re-size the text field widget or change its font, text size, and text color.
9. Save your file.

CAUTION: Do not use the following characters in the file name of your template: \ / " % #.

10. Click **File** > **Publish** to publish your file as a .swf file.

    The published .swf file will be saved to the **Project** folder.
11. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server.

After you copy the .swf file to the graphics directory (gfx.dir) on your video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

Customizing the Widget's ActionScript

After you save your Flash project in the **Project** folder in the Template Authoring Package, the ActionScript code that controls the widget can be edited to customize the behavior of the widget.

NOTE: Your Flash project must be saved in the **Project** folder in order to edit the ActionScript.

To edit the Widget's ActionScript:

1. In your Flash project, if the **Library** tab is not available, click **Window** > **Library**.
2. Select the **Library** tab.
3. Right-click the widget, and select **Edit Class**.

An ActionScript file will appear that can be manipulated as needed.

IMPORTANT: Editing the ActionScript is an advanced procedure, and errors could make the template incapable of being played on the ChannelPort. Some widgets contain commentary for editing the ActionScript code correctly.

Working with Harmonic Text Field Widgets

Please note the following about working with Harmonic text field widgets:

- Size the text field to match the longest text string you expect that field to display.
- You must embed any fonts you intend to use in your Flash project. This will ensure that they render correctly on the ChannelPort.
- You can add filters, such as a drop shadow, but be aware that these filters may cause the template to have a longer render time as the filters render.
- The internal text field of the text field widget has an instance name of "harmonicTextField," as shown in *Figure 3–2*. Do not change this instance name or the text field type (for example, Classic Text, Dynamic Text). If you do, the widget will not function correctly.

Resizing Dynamic Text Fields

The Harmonic Dynamic Text Field widget is a Flash MovieClip that contains a 100 × 100 text field. To change the size of a dynamic text field, you must open the MovieClip and edit the width and height of the contained text field. If you edit the size of the container MovieClip instead of the text field, Flash will stretch the rendered fonts and thus distort your graphic.

To edit a text field within a MovieClip:

1. Set up your Flash project. Refer to *Getting Started with Harmonic Templates* and *Applying a Widget to Your Flash Project* for instructions.
2. Drag the Harmonic Text Field widget to the stage.
3. Select the widget, and select the **Properties** tab, as shown in *Figure 3–2*.

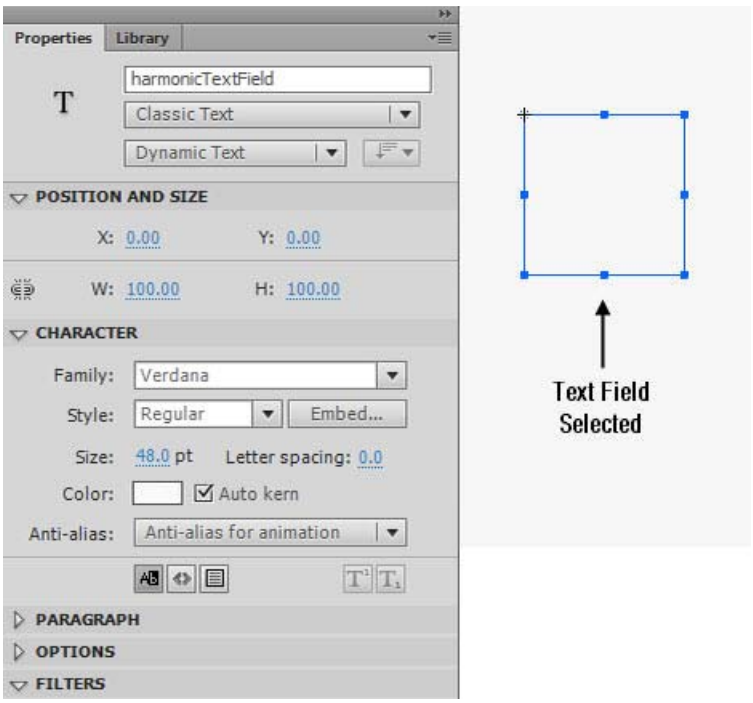


Figure 3–2: Text Field Widget Properties

4. In the properties dialog box, resize the text field as needed.

IMPORTANT: Always edit the internal text field to set the size of the dynamic text field. Always edit the container MovieClip component to set the position of the text field and to use it in motion tweens.

Naming Multiple Instances of a Dynamic Text Field

In some cases, you may have several instances of the same dynamic text field template in use in one project (for example, a Now, Next, and Later template). Any time you have multiple instances of the same dynamic text field in use in one project, you need to give each instance of the text field its own name.

All dynamic text fields must have an instance name that adheres to the following rules:

- The instance name for each field must start with the word, "field."
- The instance name must be followed by a number that indicates the box number for the field.
- Optionally, you can include a label in the instance name to help identify the field. Add an underscore (_) after the number, and then enter the label text.

The following example shows a valid template field instance name:

```
field3_Later
```

To name a text field:

1. Set up your Flash project. Refer to *Getting Started with Harmonic Templates* and *Applying a Widget to Your Flash Project* for instructions.

NOTE: The Template Authoring Package contains a sample dynamic text field template in the Sample templates folder.

2. Drag the Harmonic Text Field widget to the stage.

3. Click the widget, and select **Properties**.
4. In the Instance field, type in the new instance name. Follow the supplied conventions to name the instance.
5. Repeat *Step 2* to *Step 4* to name additional instances of the Harmonic TextField widget used in your project.

Using the Harmonic Advanced Text Widgets

The Harmonic Advanced Text widgets should be used for languages that contain complex characters or right-to-left or bi-directional text.

The Harmonic Template Widget Library contains two Advanced Text widgets—the Harmonic Advanced Text Field and the Harmonic Advanced Text Scroll. These widgets can replace the regular text field or text scroll widgets in any Harmoninc template that uses a text field or text scroll widget.

IMPORTANT: Before using a sample Harmonic template, verify your raster size and frame rate.

To use a Harmonic Advanced Text widget in a Harmonic template:

1. Set up your Flash project. Refer to *Getting Started with Harmonic Templates* for instructions.

IMPORTANT: If the .fla file is in a folder with other files that support it, you must copy all the supporting files to the Project folder as well.

2. Open the **Widget Library** and copy the Harmonic Advanced Text widget you want to use to your project libary. Refer to *Applying a Widget to Your Flash Project* for instructions.
3. In the Flash timeline, unlock the layer containing the text scroll, and select the text scroll widget on the Flash stage.
4. Click **Window** > **Properties**, and in the Properties dialog box, click **Swap**.
5. In the **Swap Symbol** dilaog box, select the Harmonic Advanced Text widget, and click **OK**, as shown in *Figure 3–3*.

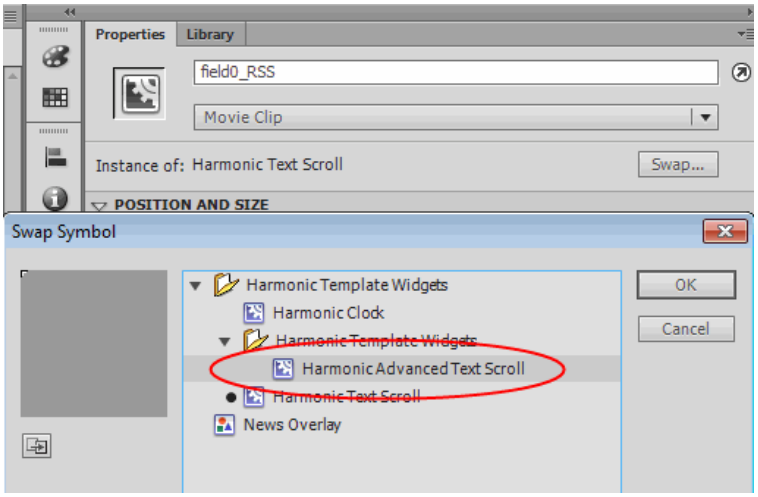


Figure 3–3: Swapping the Widget

6. On the Flash stage, resize the Harmonic Advanced Text Widget as needed.
7. Click **File** > **ActionScript Settings** to display the **Advanced ActionScript 3.0 Settings** dialog box.

8. Click the **Library path** tab.
9. In the Runtime Shared Library Settings area, from the Default Linkage drop-down menu, select **Merged into code**, as shown in *Figure 3–4*.

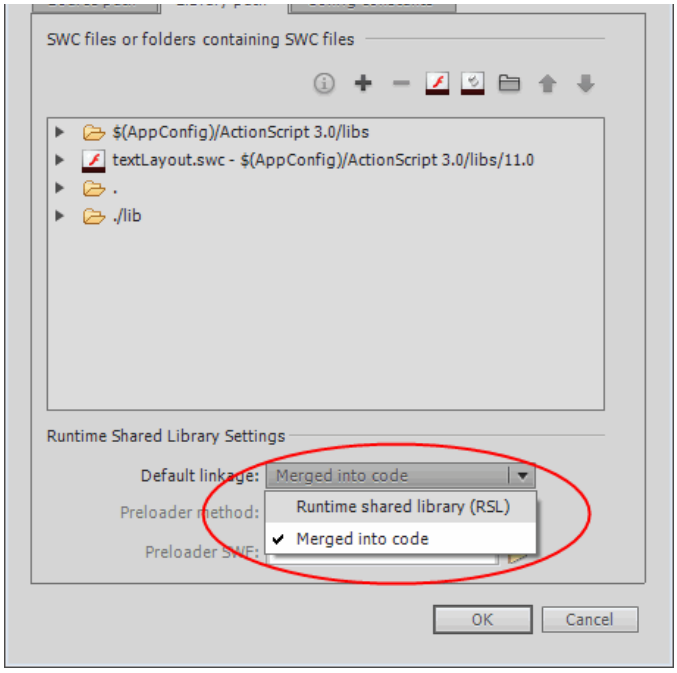


Figure 3–4: ActionScript Adjustments

10. Save your file.

CAUTION: Do not use the following characters in the file name of your template: \ / " % #.

11. Click **File** > **Publish** to publish your file as a .swf file.

    The published .swf file will be saved to the **Project** folder.
12. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server.

After you copy the .swf file to the graphics directory (gfx.dir) on your video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

Configuring Three-Point Animations

You can design templates to have an intro section, a loop section, and an outro section (in other words, a three-point animation). The template will play the intro and then stay on the loop section until it receives a command to play the outro. To enable this functionality, you must provide the following frame labels in Flash:

- A frame label called "loop start" on the first frame of the looped section.
- A frame label called "loop end" on the last frame of the looped section.

To set up three-point animation loop frame labels:

1. Set up your Flash project. Refer to *Getting Started with Harmonic Templates* for instructions.

NOTE: The Template Authoring Package contains a sample three-point animation in the Sample templates folder.

2. Click **Insert** > **Timeline** > **Layer** to add a new layer to the project.
3. Double-click the new layer, and give it a title (for example, "Loop").
4. On the first frame of the loop section (in other words, the first frame after the end of the introduction), right click the timeline and select **Insert Keyframe**, as shown in *Figure 3–5*.

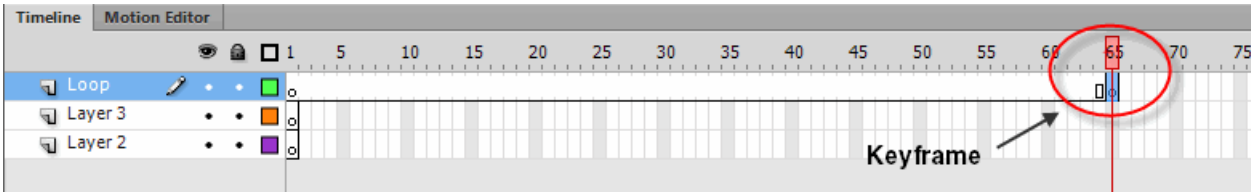


Figure 3–5: Add Keyframe

5. Click **Window** > **Properties** > **Label**, and type "loop start" in the **Name** box, as shown in *Figure 3–6*.

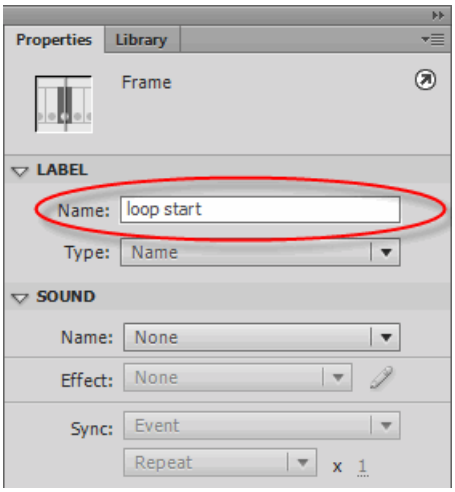


Figure 3–6: Loop Start Properties

The label, "loop start," will appear in the timeline, as shown in *Figure 3–7*.

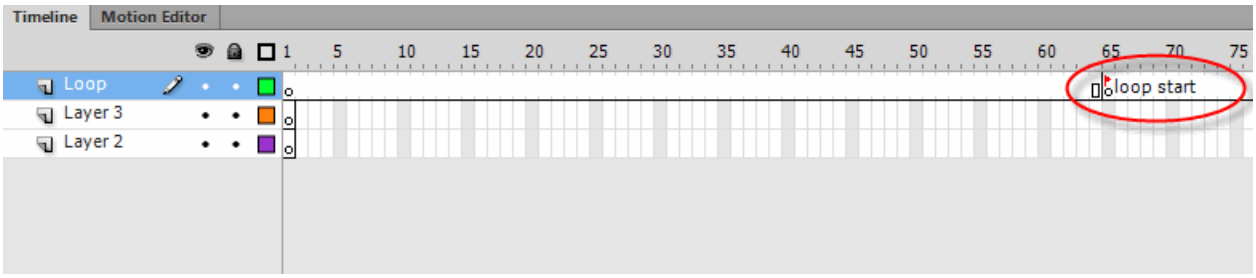


Figure 3–7: Loop Start Label

6. Add a blank keyframe on the last frame of the loop section (in other words, the last frame before the start of the outro).

7. Click **Window** > **Properties** > **Label**, and type "loop end" in the **Name** box, as shown in *Figure 3–8*.

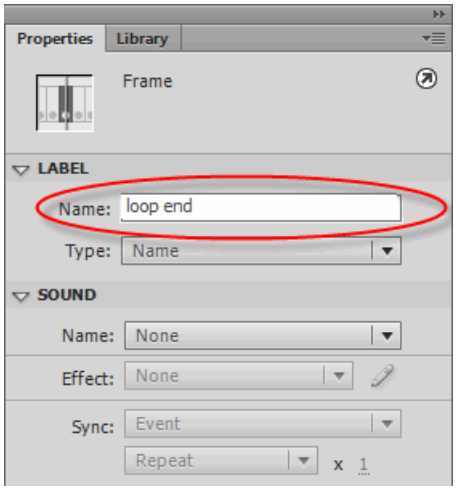


Figure 3–8: Loop End Properties

The label, "loop end," will appear in the timeline.

8. View, edit, or add visual elements to the template as desired.
9. Save your file.

CAUTION: Do not use the following characters in the file name of your template: \ / " % #.

10. Click **File** > **Publish** to publish your file as a .swf file.

    The published .swf file will be saved to the **Project** folder.

11. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server.

After you copy the .swf file to the graphics directory (gfx.dir) on your video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

About Dynamically Loading Files in a Template

In some cases, you may want to update the text field of a template with the contents of a text file or dynamically load an image file into a template. To do so, the file must first be stored in the graphics directory (gfx.dir) on the video server.

Before the template can dynamically access such a file, the ActionScript code of the template needs to be edited. Specifically, the pseudo-directory "templates" must be prepended to the path of the file being loaded from gfx.dir.

For example, if you wanted to update the text field of a template with the contents of file named "credits.txt," the ActionScript would need to be edited to use the path "templates/credits.txt" to load the file.

IMPORTANT: Editing the ActionScript is an advanced procedure, and errors could make the template incapable of being played on the ChannelPort. Some widgets contain commentary for editing the ActionScript code correctly.

Using the Harmonic Live Audio Voiceover Template

The Harmonic Live Audio Voiceover template contains the Harmonic Live Audio Voiceover widget. This template is intended for use only with live audio voiceover and not with recorded audio. When this template is faded up, it allows the input of the AES channel to supercede any other audio that is active on the ChannelPort.

For more information on connecting AES input or Emergency Alert System (EAS) input to the ChannelPort, refer to the *Spectrum Installation and Hardware Reference Guide*.

The audio voiceover template may be used in conjuction with the Harmonic EAS templates.

IMPORTANT: Before using a sample Harmonic template, verify your raster size and frame rate.

To use the Harmonic Live Audio Voiceover template:

To use a sample Harmonic template:

1. From the Template Authoring package, open the **Samples** folder.
2. Open the **Sources** folder.
3. Open the folder for the raster size and frame rate you want to work in, and copy the sample **live-audio-voiceover** .fla file from that folder to the **Project** folder.
4. In Flash Professional, open the **live-audio-voiceover** .fla file you copied to the **Project** folder.

NOTE: When the Live Audio Voiceover template is open in Flash Professional, you will see a graphic, as shown in *Figure 3-9*. When the template is loaded on the ChannelPort, it will be transparent.

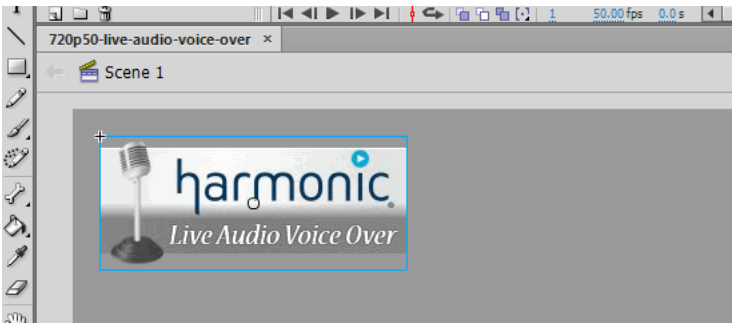


Figure 3-9: Harmonic Live Audio Voiceover Template

5. Save your file.

CAUTION: Do not use the following characters in the file name of your template: \ / " % #.

6. Click **File** > **Publish** to publish your file as a .swf file.

   The published .swf file will be saved to the **Project** folder.
7. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server.

After you copy the .swf file to the graphics directory (gfx.dir) on your video server, it can be loaded on the ChannelPort and control the AES input or be used in conjunction with an EAS template.

If you do not want to use the Harmonic Live Audio Voiceover template, but want to use the Live Audio Voiceover widget, follow the steps in *Applying a Widget to Your Flash Project*.

Chapter 4
Using Custom Templates

This chapter includes the following sections:

Setting Up a Custom Template

If you want to create a custom template for the ChannelPort that does not use one of the Harmonic .fla files included in the Template Authoring Package, you must first properly configure Adobe® Flash® Professional and the ActionScript settings for your custom project. If your custom project does not contain the necessary ActionScript code, you will not be able to play it on the ChannelPort.

NOTE: Before you start a project using a custom template, please read *Chapter 7, ChannelPort Authoring Guidelines* for information on authoring graphics that play correctly on the ChannelPort.

IMPORTANT: In order to play your custom template on the ChannelPort, you must first properly configure Flash Professional and the ActionScript settings for your project. Follow the procedures in this section in order. The ChannelPort will not play a custom template that is not properly configured.

Configuring Flash Professional

ChannelPort supports .swf files that are compatible with Flash Player 10 and 10.1 (for users with Adobe Creative Suite® 5 and earlier) and 10.3 (for users with CS6). When starting a new project, you need to configure Flash Professional to support Flash Player 10 and 10.1, or 10.3, as well as ActionScript 3.0.

To configure Flash Professional:

1. Click **File** > **New** to create a new Flash Professional project. The **New Document** dialog box will appear.
2. Under **Type**, select **ActionScript 3.0**.
3. Set the appropriate width, height, and frame rate for the project, as shown in *Figure 4–1*.

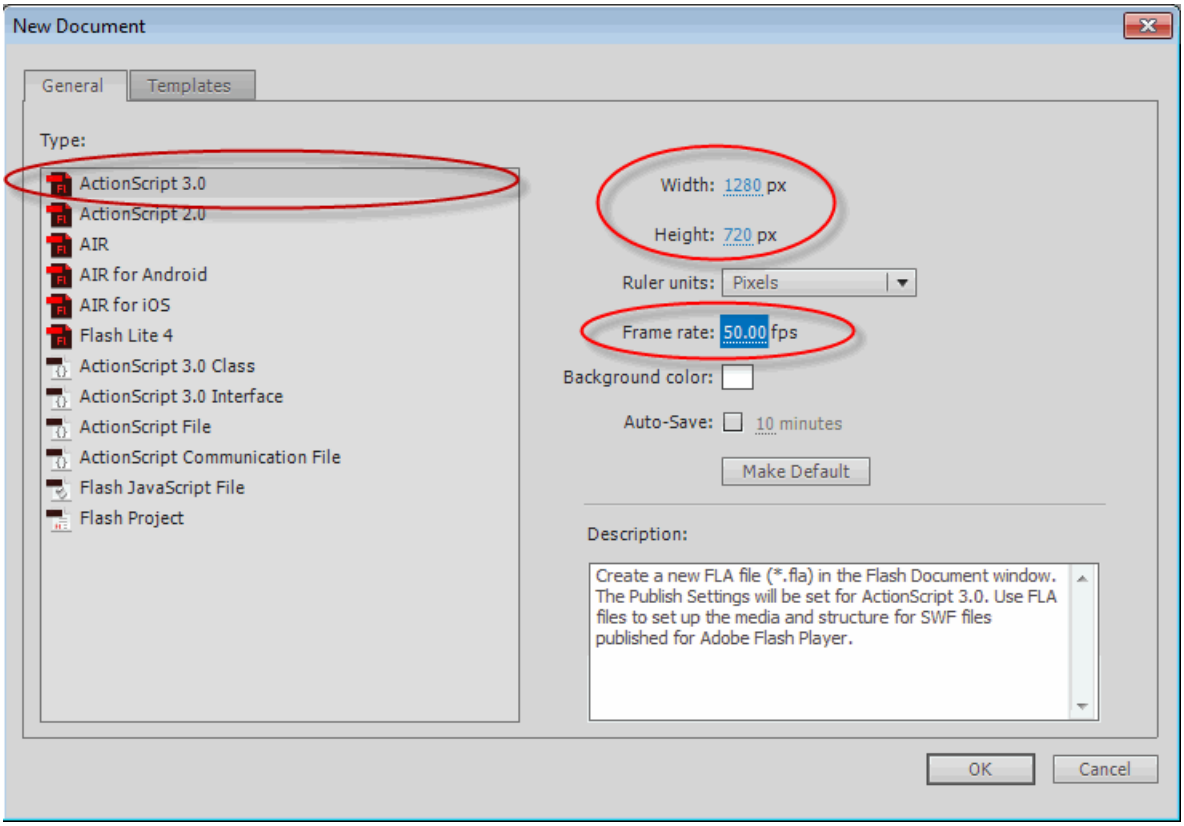


Figure 4–1: Flash Professional Configuration

4. Click **OK**.

NOTE: All templates should be authored at Progressive frame sizes, and the frame rate should be set to 50 or 60 frames per second. Refer to *Template Raster Sizes* in *Chapter 2, Installing and Using the Template Authoring Package* for a list of supported raster sizes.

5. Click **File** > **Publish Settings** to bring up the **Publish Settings** dialog box, as shown in *Figure 4–2*.

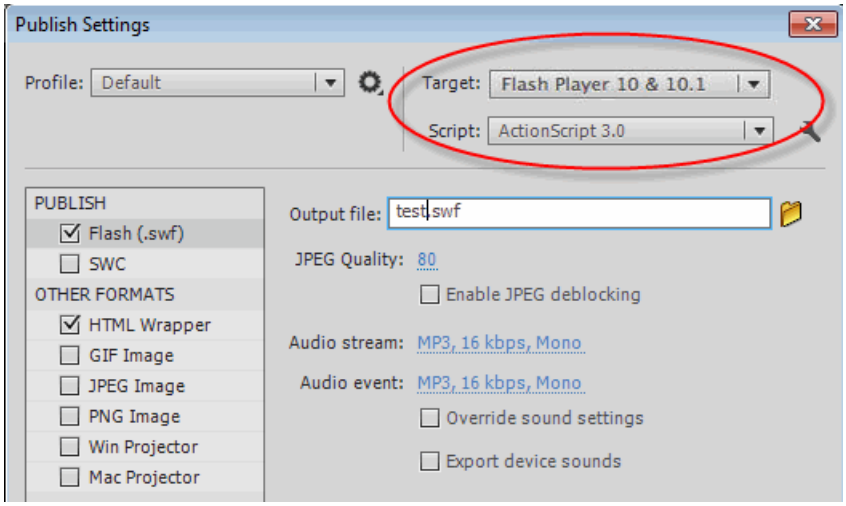


Figure 4–2: Publish Settings Dialog Box

6. Click the **Player** drop-down box, and if you are using CS5 or earlier, select **Flash Payer 10 & 10.1** from the list. If you are using CS6, select **Flash Player 10.3**.
7. Click **OK**.
8. Save your project. Harmonic recommends that you save your project in the **Project** folder in the **Template Authoring Package**.

CAUTION: Do not use the following characters in the file name of your template: \ / " % #.

Continue to *Applying ActionScript Code to the Custom Template*.

Applying ActionScript Code to the Custom Template

When you create a new template in Flash Professional, you create a file with the extension .fla. When you publish the .fla file, a new file is created with the extension .swf. In order for your template to be controlled by ChannelPort, the .swf file needs to contain specific ActionScript code that has been written by Harmonic. This section describes how to apply the ActionScript code to your custom template.

To apply ActionScript code to the .fla file:

1. In Flash Professional, select **File** > **ActionScript Settings** to display the **Advanced ActionScript 3.0 Settings** dialog box.
2. In the **Document Class** field, type **SampleHarmonicTemplate**, as shown in *Figure 4–3*.
3. Select the **Source path** tab, and click the **Browse to Path** icon to browse to the location (folder) where you saved your template, and select that location (folder).

NOTE: Harmonic recommends that you save your project in the **Project** folder in the Template Authoring Package.

The file name extension will appear, as shown in *Figure 4–3*.

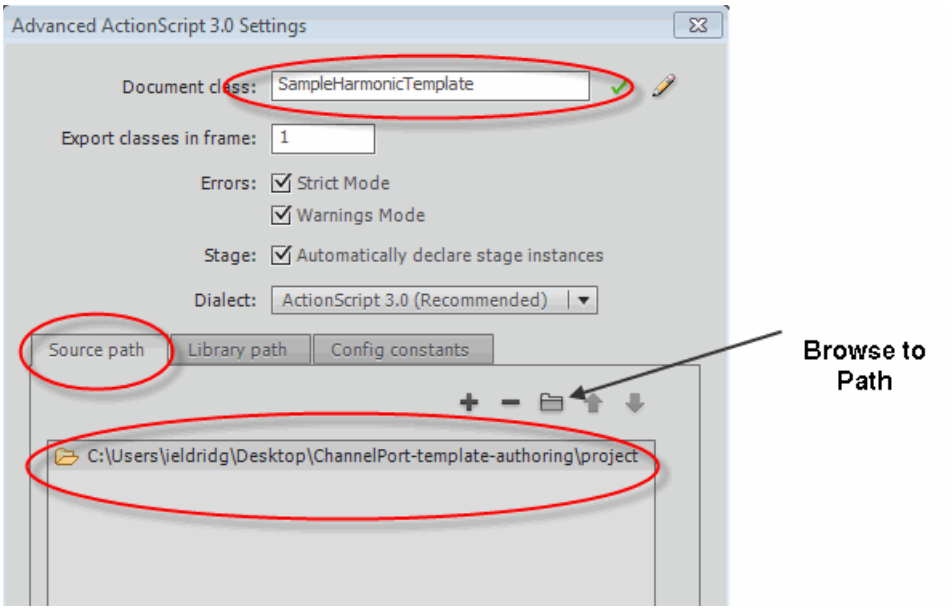


Figure 4–3: ActionScript Configuration

4. Select the **Library path** tab, and click the **Add New Path** icon, as shown in *Figure 4–4*.

5. Click the **Browse to Path** icon to browse to the location (folder) where you saved your template, and select that location (folder).

   The file name extension will appear, as shown in *Figure 4–4*.

IMPORTANT: Do not delete any of files already located under the Library Path. Doing so could cause the template not to play on the ChannelPort.

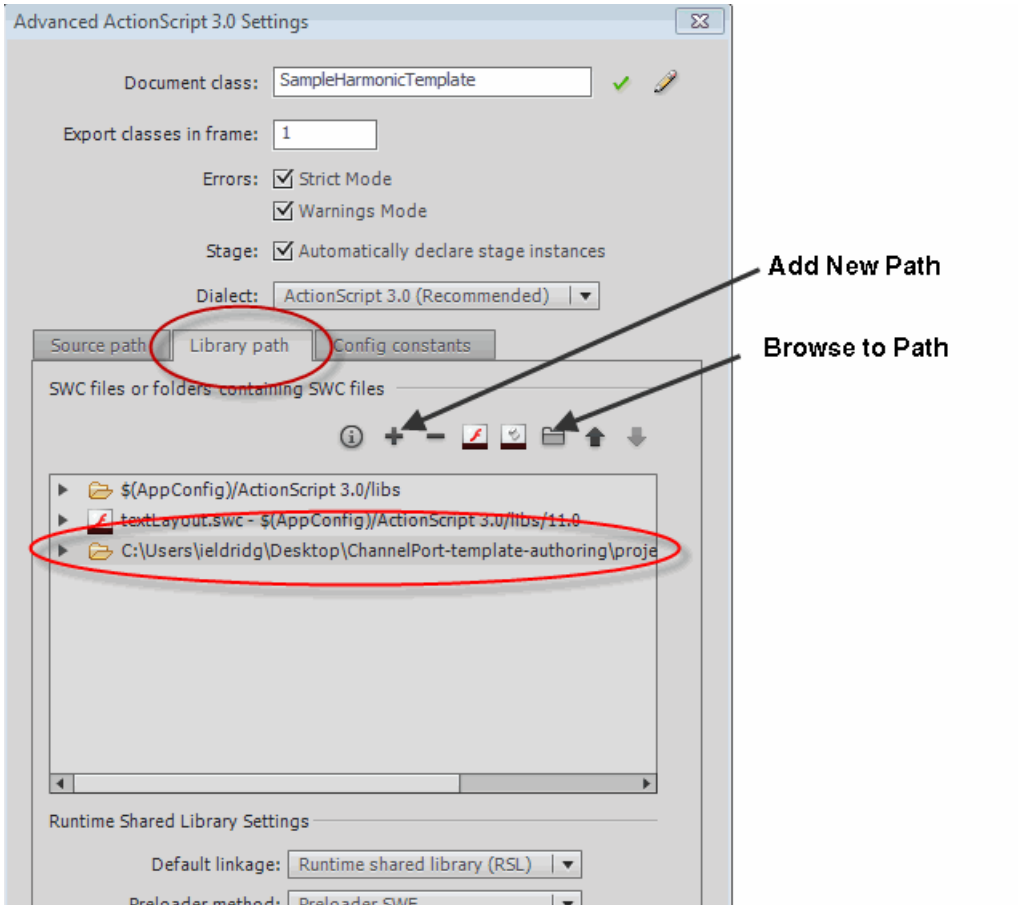


Figure 4–4: ActionScript Configuration Con't.

6. To check your settings, click the check mark icon to the right of the **Document Class** field.

   A dialog box will appear indicating that the definition of the document class was found in the correct folder, as shown in *Figure 4–5*.

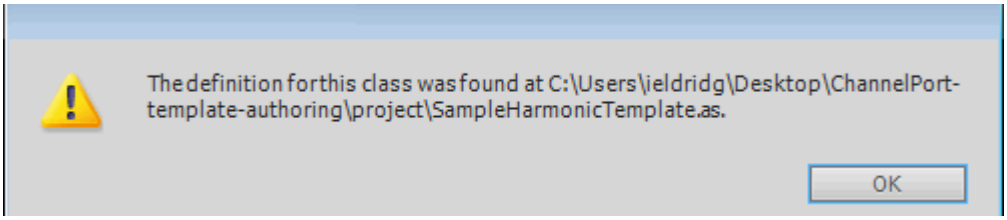


Figure 4–5: Definition for Class Found Dialog Box

7. Before you complete your project, click **File** > **Publish** to publish your project as a .swf file.

Your published .swf file will now be a valid Harmonic ChannelPort template.

8. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server.

After you copy the .swf file to the graphics directory (gfx.dir) on your video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

Customizing ActionScript Code

In some cases, you may want your template to have customized behavior. For example, you may want the command that starts the template's animation to trigger a customized action in the template. Implementing a customized action in a template involves the following:

- Edit the Document class field, and give it a unique name (for example, "CustomTemplate").
- Customize the ActionScript of the "CustomTemplate" class.

To customize the ActionScript:

1. Set up your Flash project. Refer to *Configuring Flash Professional* and *Applying ActionScript Code to the Custom Template* for instructions.
2. Click **File** > **ActionScript Settings**.
3. In the **Document class** field, type in a new, unique name, for example "CustomTemplate," and click the pencil icon, as shown in *Figure 4–6*.

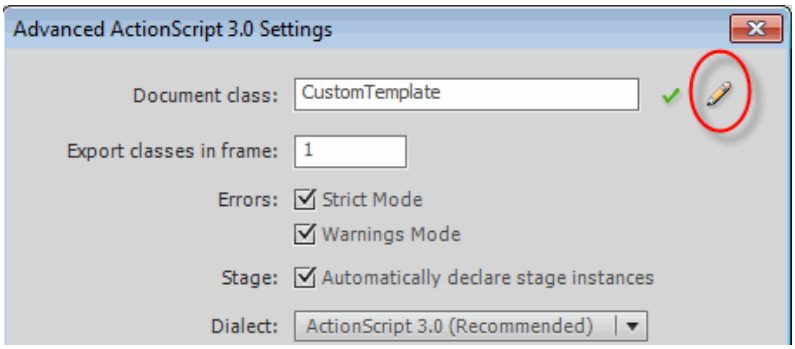


Figure 4–6: CustomTemplate Document Class

4. An ActionScript file will appear.
5. Change the **public class** portion of the file to read "CustomTemplate."
6. Change the **extends** portion of the file to read "HarmonicTemplate."
7. Type in the custom functionality, as shown in *Figure 4–7*.

Figure 4–7: CustomTemplate ActionScript

8. Save the file as "CustomTemplate.as."

Adding an Event Listener for Accessing Flash Stage Properties

When you load a template to the ChannelPort, the ChannelPort controls when the template is added to the Flash stage. This is different from the Flash player, where the .swf file is attached to the stage immediately. Your ActionScript code cannot access properties of the stage properties, such as the width or height, until the template has been added to the Flash stage. To detect when the template has been put on the Flash stage, add an event listener to your ActionScript code.

To add an event listener:

1. Set up your Flash project. Refer to *Configuring Flash Professional*, *Applying ActionScript Code to the Custom Template*, and *Customizing ActionScript Code* for instructions.
2. In the ActionScript file, change the **class** portion of the file to read "CustomTemplate," and change the **extends** portion of the file to read "SampleHarmonicTemplate."
3. Add the event listener for accessing Flash Stage properties by extending the ActionScript code, as shown in *Figure 4–8*.

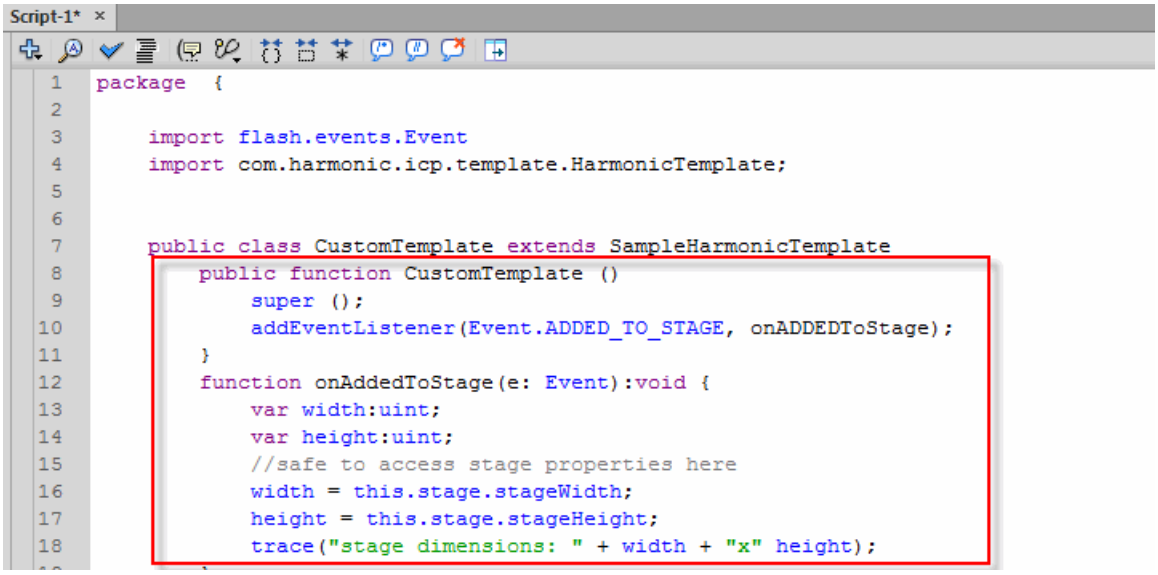


Figure 4–8: Adding Event Listener to ActionScript

Applying a Widget to Your Flash Project

The **Harmonic Template Widget Library** contains Flash symbols created by Harmonic that can be added to Flash projects being authored for the ChannelPort.

Refer to *About Harmonic Widgets* in *Chapter 2, Installing and Using the Template Authoring Package* for more information about the **Harmonic Template Widget Library**.

To apply a widget to an existing project:

1. Click **File** > **Open** and open the **Template Authoring Package**.
2. Open on the **Widgets** folder, and open the **HarmonicTemplateWidgetLibrary**.
3. In Flash Pro, if the **Library** tab is not available, click **Window** > **Library**.
4. Select the **Library** tab.
5. Select **HarmonicTemplateWidgetLibrary.fla** from the library drop-down menu, as shown in *Figure 4–9*.

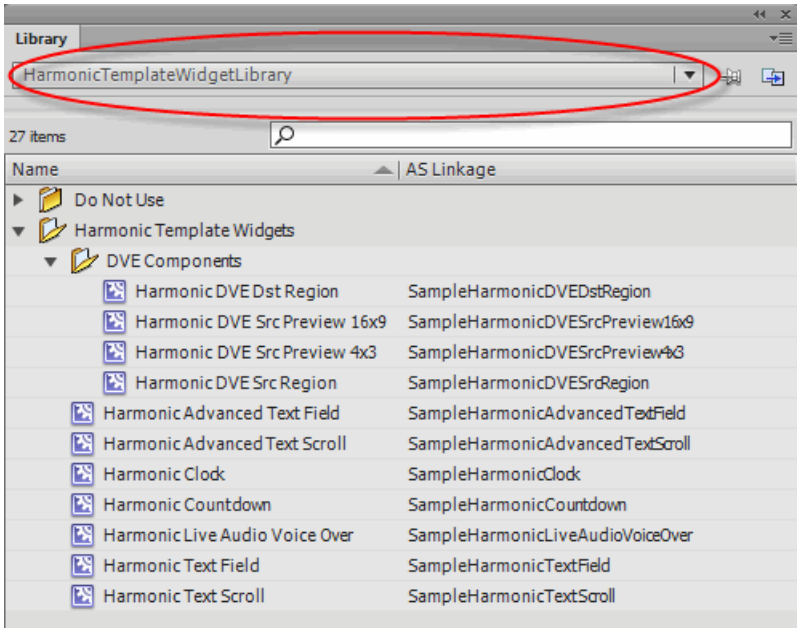


Figure 4–9: Library Tab Drop-Down Menu

6. Copy the Harmonic widget you need from the **Widget Library.**
7. Open the **Library** drop-down menu to open your Flash project library.
8. Paste the Harmonic widget into your Flash project library.

   Once the widget is in your Flash project library, it can be dragged onto the stage and manipulated in your project. For example, you can re-size the text field widget or change its font, text size, and text color.
9. Save your file.

CAUTION: Do not use the following characters in the file name of your template: \ / " % #.

10. Click **File** > **Publish** to publish your file as a .swf file.

    The published .swf file will be saved to the **Project** folder.
11. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server.

After you copy the .swf file to the graphics directory (gfx.dir) on your video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

Customizing the Widget's ActionScript

After you save your Flash project in the **Project** folder in the Template Authoring Package, the ActionScript code that controls the widget can be edited to customize the behavior of the widget.

NOTE: Your Flash project must be saved in the **Project** folder in order to edit the ActionScript.

To edit the Widget's ActionScript:

1. In your Flash project, if the **Library** tab is not available, click **Window** > **Library**.
2. Select the **Library** tab.
3. Right-click the widget, and select **Edit Class**.

An ActionScript file will appear that can be manipulated as needed.

IMPORTANT: Editing the ActionScript is an advanced procedure, and errors could make the template incapable of being played on the ChannelPort. Some widgets contain commentary for editing the ActionScript code correctly.

Using the Harmonic Advanced Text Widgets

The Harmonic Advanced Text widgets should be used for languages that contain complex characters or right-to-left or bi-directional text.

The Harmonic Template Widget Library contains two Advanced Text widgets—the Harmonic Advanced Text Field and the Harmonic Advanced Text Scroll. These widgets can be added to any custom template.

IMPORTANT: Before using a sample Harmonic template, verify your raster size and frame rate.

To use a Harmonic Advanced Text widget in a Harmonic template:

1. Set up your Flash project. Refer to *Configuring Flash Professional* and *Applying ActionScript Code to the Custom Template* for instructions.
2. Open the **Widget Library** and copy the Harmonic Advanced Text widget you want to use to your project libary. Refer to *Applying a Widget to Your Flash Project* for instructions.
3. Drag the Harmonic Advanced Text widget to the Flash stage and manipulate it as needed.
4. Click **File** > **ActionScript Settings** to display the **Advanced ActionScript 3.0 Settings** dialog box.
5. Click the **Library path** tab.
6. In the Runtime Shared Library Settings area, from the Default Linkage drop-down menu, select **Merged into code**, as shown in *Figure 4–10*.

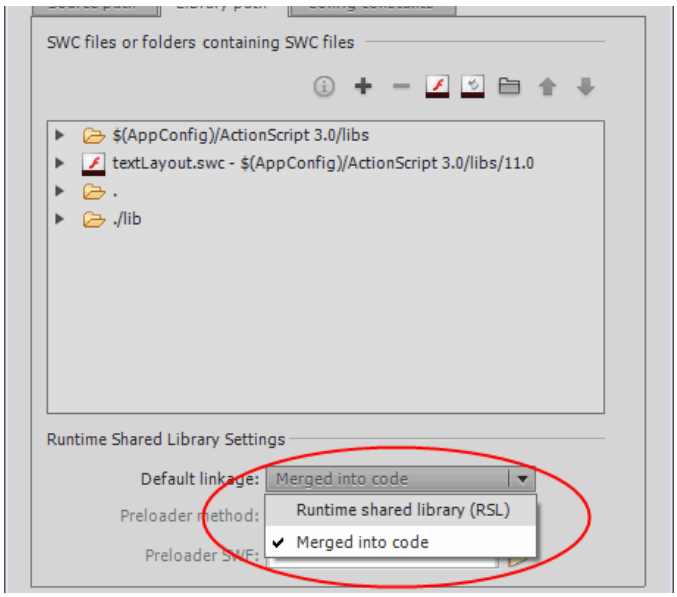


Figure 4–10: ActionScript Adjustments

7. Save your file.

CAUTION: Do not use the following characters in the file name of your template: \ / " % #.

8. Click **File** > **Publish** to publish your file as a .swf file.

   The published .swf file will be saved to the **Project** folder.

9. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server.

After you copy the .swf file to the graphics directory (gfx.dir) on your video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

About Controlling the MovieClip Timeline

All Harmonic templates that can be played on the ChannelPort are derived from the Flash MovieClip class. The ChannelPort controls the main timeline of a template in response to Oxtel commands. For example, after loading a template, the ChannelPort stops the main timeline if the layer is invisible, and then starts the timeline once the layer starts fading in. If the template contains customized ActionScript code that tries to control the main timeline using methods such as "stop()," "play ()," or "gotoAndPlay()," the ChannelPort will not be able to control the timeline. This can lead to unexpected behavior, and template animations may not play correctly.

To avoid conflicts, create MovieClip objects for any animations that you wish to control from within the template. These objects have their own timelines, and their animations can be controlled through ActionScript to achieve the desired effects.

Customizing a Text Field Template

Please note the following about working with Harmonic text field widgets:

- Size the text field to match the longest text string you expect that field to display.

- You must embed any fonts you intend to use in your Flash project. This will ensure that they render correctly on the ChannelPort.
- You can add filters, such as a drop shadow, but be aware that these filters may cause the template to have a longer render time as the filters render.

To set up a custom text field:

1. Set up your Flash project. Refer to *Configuring Flash Professional*, *Applying ActionScript Code to the Custom Template*, and *Applying a Widget to Your Flash Project*.
2. Copy the Harmonic Text Field widget from the library, and paste it into your Flash project library.
3. Rename the Harmonic Text Field widget (for example, "Custom Text Field").
4. Open the Advanced ActionScript 3.0 Settings dialog box for "Custom Text Field" and rename the class in the Document class name (for example, "CustomTextField").
5. Select the **Source path** tab, and click the **Browse to Path** icon to browse to the **Project** folder in the Template Authoring Package, and select that location.
6. Select the **Library path** tab, and click the **Browse to Path** icon to browse to the **Project** folder in the Template Authoring Package, and select that location.

NOTE: If you are storing your project file in the same location as the Harmonic Template Authoring Package, you can type a period.

Once the widget is in your Flash project library, it can be dragged onto the stage and manipulated. You can re-size the text field and change the display properties (for example the font, text size, and text color).

IMPORTANT: The internal text field has an instance name of "harmonicTextField." Do not change this instance name or the text field type (Classic Text, Dynamic Text) because if you do, the widget will not function correctly.

Setting Up Multiple, Unique Text Fields

In some cases, you may want to set up several instances of a text field in one project but want each text field to be unique (for example, each text field needs to have a different function, shape, or font). To do this you must first reconfigure the Harmonic Text Field widget, and then copy that reconfigured widget for as many instances as you want. After you've copied the widgets, you can alter the text fields as needed.

Reconfiguring the Text Field Widget Properties

To reconfigure the widget properties:

1. Set up your Flash project. Refer to *Configuring Flash Professional* and *Applying a Widget to Your Flash Project*.
2. Right-click on the Harmonic Text Field widget and select **Properties**. The **Symbol Properties** dialog box will appear.
3. Select **Advanced**.
4. Type in a new, unique name for this symbol (for example, "CustomTextField_01")
5. Select the **Export for ActionScript** check box.
6. Right-click the **Class** field, copy the text "SampleHarmonicTextfield," and then paste that text into the **Base Class** field, as shown in *Figure 4–11*.

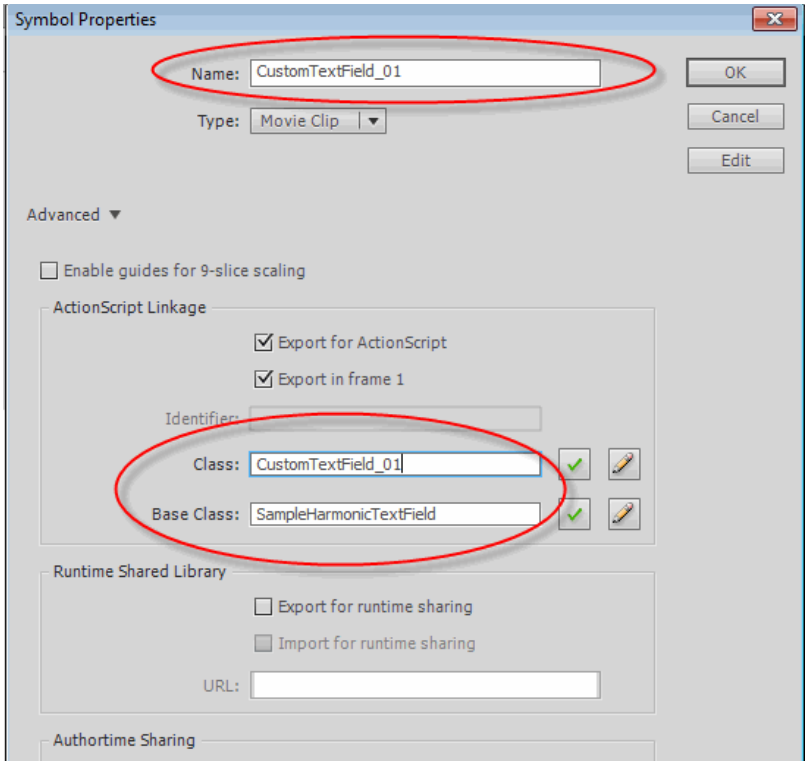


Figure 4–11: Renaming the Base Class

7. In the **Class** field, type in a new, unique name, for example "CustomTextField_1," and click **OK**.

An error message will appear indicating that a definition for the class could not be found in the class path, as shown in *Figure 4–12*.

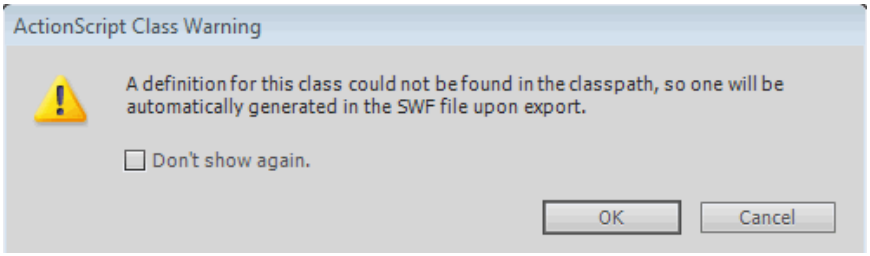


Figure 4–12: No Definition for Class Found Warning

8. Click **OK**.
9. You will need to extend the ActionScript file for the custom template. To extend the ActionScript file:
   a. Right-click the widget symbol, and select **Edit Class**. An ActionScript file will appear.
   b. Edit the **extends** portion of the file to read, "SampleHarmonicTextField," as shown in *Figure 4–13*.

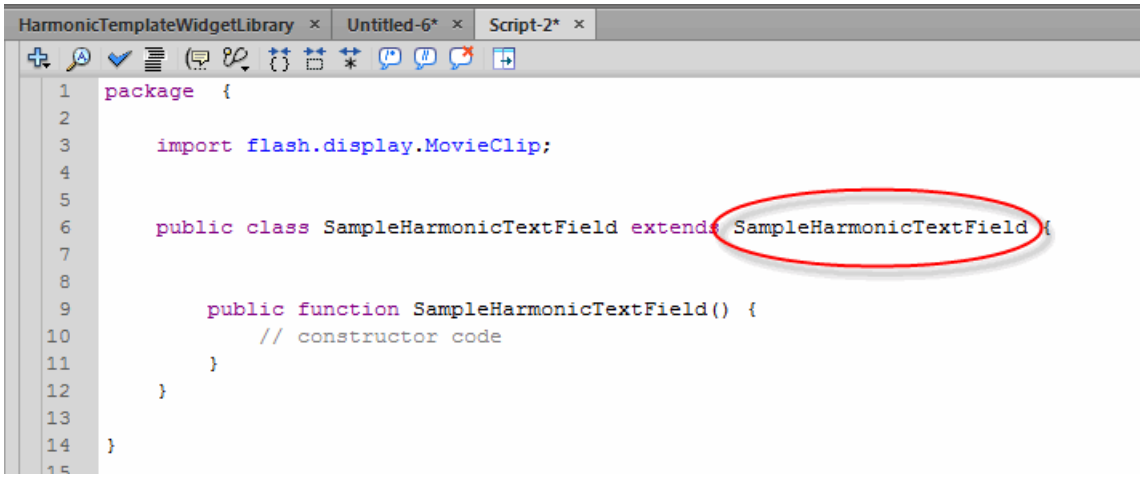


Figure 4–13: Extending the ActionScript File (Continued)

c. Save the edited ActionScript file in the same location as your .fla file.

The widget can now be copied for additional instances.

Copying a Reconfigured Text Field Widget for Additional Instances

To copy a reconfigured widget:

1. Right-click on the reconfigured widget in the library, and select **Duplicate**. The **Symbol Properties** dialog will appear.
2. Type in a new, unique name for this symbol (for example, "CustomTextField_2").
3. Select the **Export for ActionScript** check box.
4. Right-click the **Class** field, copy the text "SampleHarmonicTextfield," and then paste that text into the **Base Class** field, as shown in *Figure 4–14*.

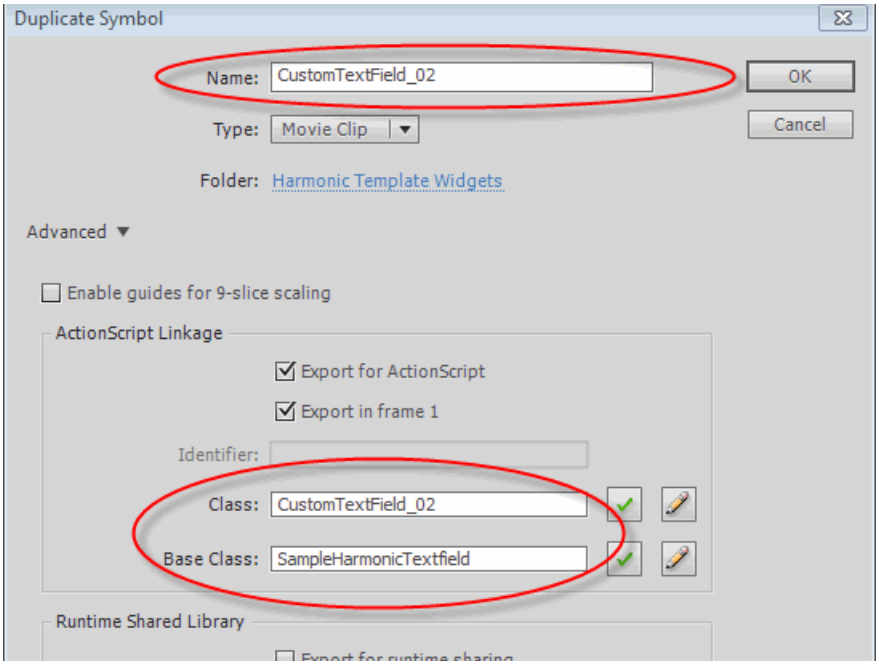


Figure 4–14: Renaming the Base Class of Copied Symbol

5. In the **Class** field, type in a new unique name (for example, "CustomHarmonicTextField_2"), and click **OK**.

   An error message will appear indicating that a definition for the class could not be found in the class path, as shown in *Figure 4–15*.

.

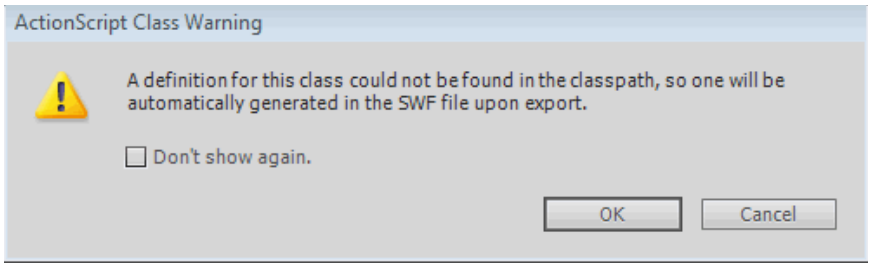


Figure 4–15: No Definition for Class Found Warning

6. Click **OK**.
7. You will need to extend the ActionScript file for the custom template. To extend the ActionScript file:
   a. Right-click the widget symbol, and select **Edit Class**. An ActionScript file will appear.
   b. Edit the **extends** portion of the file to read "SampleHarmonicTextField."
   c. Name and save the edited ActionScript file in the same location as your .fla file.

To create additional copies of the text field widget, repeat *Step 1* through *Step 7*.

Once you have copied the number of text fields you need, the text fields can be placed on the stage and manipulated.

About Dynamically Loading Files in a Template

In some cases, you may want to update the text field of a template with the contents of a text file or dynamically load an image file into a template. To do so, the file must first be stored in the graphics directory (gfx.dir) on the video server.

Before the template can dynamically access such a file, the ActionScript code of the template needs to be edited. Specifically, the pseudo-directory "templates" must be prepended to the path of the file being loaded from gfx.dir.

For example, if you wanted to update the text field of a template with the contents of file named "credits.txt," the ActionScript would need to be edited to use the path "templates/credits.txt" to load the file.

IMPORTANT: Editing the ActionScript is an advanced procedure, and errors could make the template incapable of being played on the ChannelPort. Some widgets contain commentary for editing the ActionScript code correctly.

Chapter 5
Creating Flash Videos and MPEG-4 Files for ChannelPort

This Chapter includes:

In addition to supporting graphic templates that have been authored with Adobe® Flash® Professional and published as .swf files, the ChannelPort also supports templates encoded as Flash Video (.flv) files with alpha (transparency) and MPEG-4 (.mp4) files using Adobe Media Encoder or Adobe After Effects®.

Creating a Flash Video File with Alpha

You can use Media Encoder or After Effects to encode a large sequence of image files (for example, .tga files) that will be exported as a .flv file with alpha that can be played as a graphic template on the ChannelPort.

This section contains the following procedures:

Creating a Flash Video File with Alpha Using Adobe Media Encoder

1. In Media Encoder, click **File** > **Add Source**, and choose the necessary file(s) from the **Open** dialog box.

NOTE: If you are adding an image sequence, in the **Open** dialog box, click the first file in the sequence, and select the **Enable Sequence** check box.

2. From the **Format** drop-down menu, select **FLV**.
3. From the **Preset** drop-down menu, select the appropriate resolution and frame rate, and click **OK**.
4. Click **FLV** to open the **Export Settings** dialog box, and in the **Export Settings** area, configure the following settings:
   a. Select the check box for **Export Video**.
   b. If you do not want to export audio with your file, clear the check box for **Export Audio**.

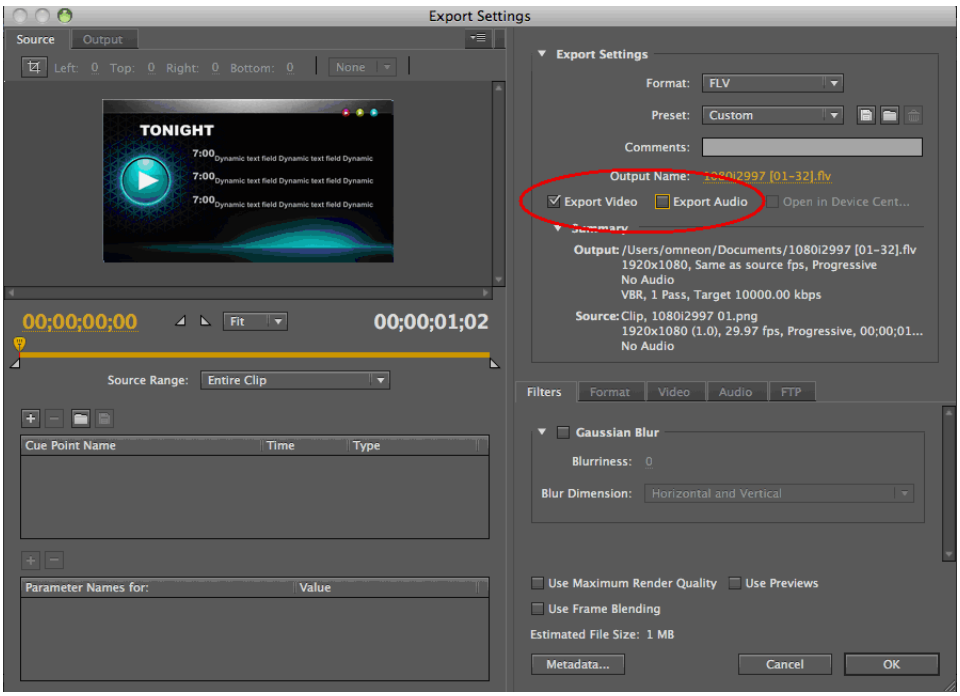


Figure 5–1: Export Settings Dialog Box

5. Make sure the check boxes for **Use Maximum Render Quality** and **Use Frame Blending** are cleared (default).
6. Select the **Filters** tab, and make sure the check box for **Gaussian** Blur is cleared (default).
7. Select the **Video** tab, and configure the following settings:
   a. Select the check box for **Encode Alpha Channel**.
   b. Make sure the check box for **Resize Video** is cleared (default) or is set to the target resolution.
   c. From the **Frame Rate** drop-down menu, select the frame rate that matches the target frame rate.
   d. Make sure the check box for **Render at Maximum Depth** is cleared (default).

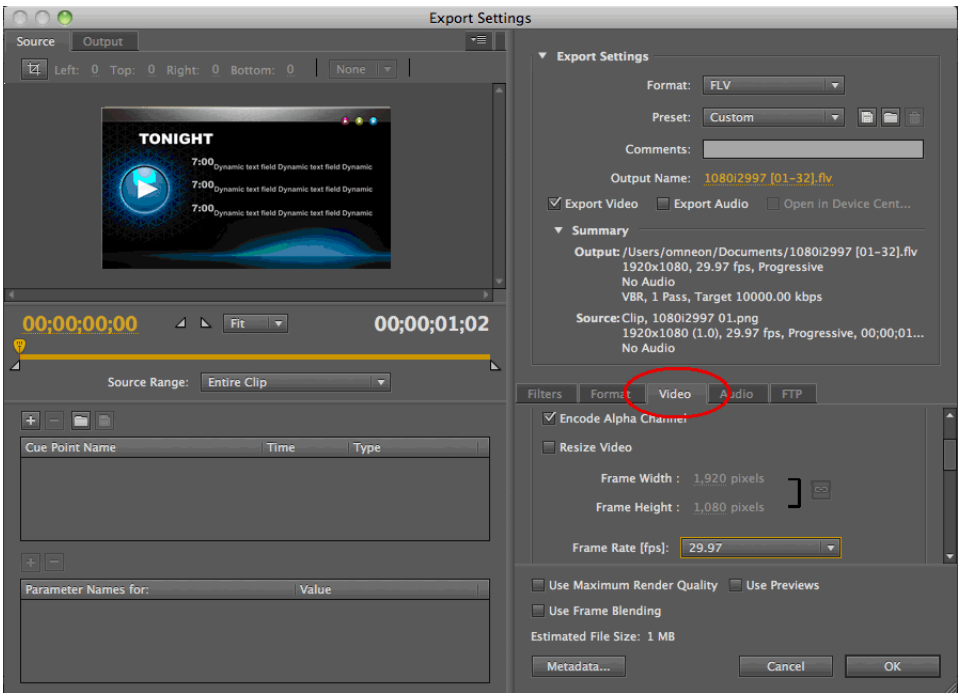


Figure 5–2: Video Settings Tab

8. From the **Video** tab, scroll down to the **Bitrate Settings**, and make sure the check box for **VBR** is selected (default).
9. From the **Video** tab, scroll down to the **Advanced Settings**, and configure the following settings:
    a. Select the check box for **Set Key Frame Distance**, and set the **Key Frame Distance** to 72 frames.
    b. Select the check box for **Simple Profile**.
    a. Make sure the **Undershoot [% target]** is set to 90 (default).
    b. From the **Quality** drop-down box, select **Best**.
10. If you want to include Audio with your file, make sure the **Export Audio** check box is selected, click the **Audio** tab, and configure the following settings.
    a. In the **Basic Audio Settings** area, for **Output Channels**, make sure **Stereo** is selected (default).
    b. In the **Bitrate Settings** area, from the **Bitrate** drop-down menu, select **128** (default).
11. Click **OK**.
12. From the **Queue** area, click **Start Queue**.

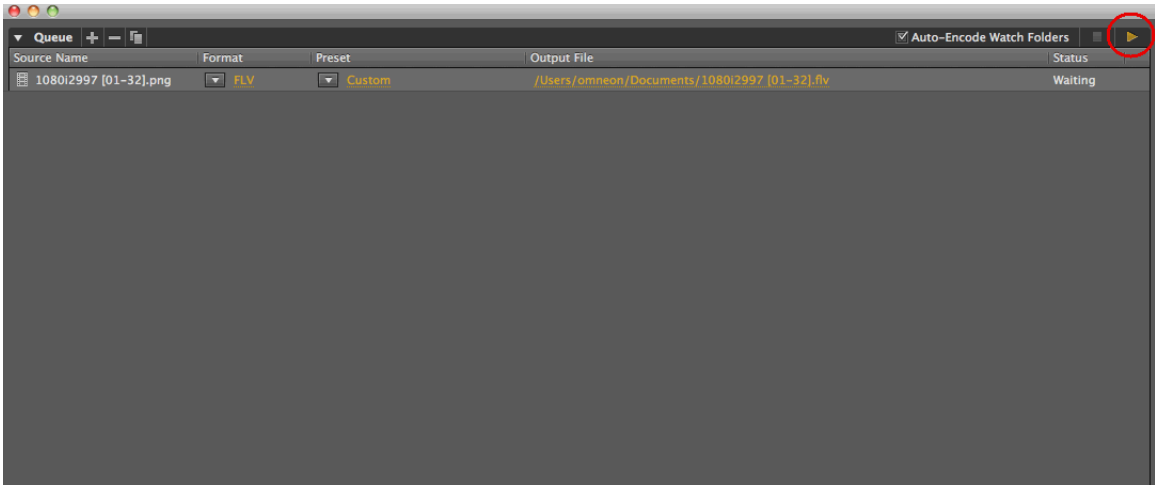


Figure 5–3: Start Queue

You can view the encode process from the **Current Encode** area.

13. When your encode is complete, copy the .flv file to your configured graphics directory (**gfx.dir**) on the video server.

After you copy the .flv file to the graphics directory (gfx.dir) on the video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

Creating a Flash Video File with Alpha Using Adobe After Effects

1. In After Effects, select **Composition** > **New Composition**.
2. Select the appropriate resolution, frame rate, and duration, and click **OK**.

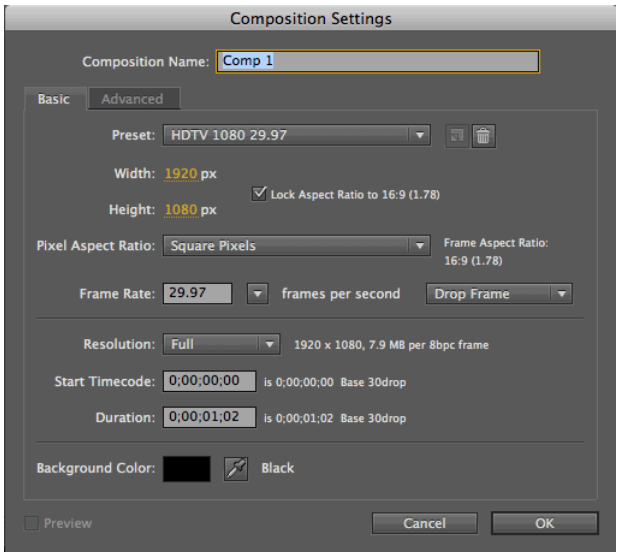


Figure 5–4: Composition Settings Dialog Box

3. Select **File** > **Import** > **File**.

NOTE: If you are adding an image sequence, in the **Open** dialog box, click the first file in the sequence, and select the **Enable Sequence** check box.

4. In the **Project** area, right-click the imported sequence, and select **Interpret Footage** > **Main** to open the **Interpret Footage** dialog box.
5. In the **Interpret Footage** dialog box, make sure the field for **Assume this frame rate** matches the frame rate configured in *Step 2*.
6. Drag your new composition to the **Render Queue** area.
7. From the **Output Module** drop-down menu, select **FLV with Alpha**.
8. Click **FLV with Alpha** to open the **Output Module Settings** dialog box, and configure the following settings:
   a. Select the check box for **Include Source XMP Metadata**.
   b. If you do not want to export audio with your file, clear the check box for **Audio Output**.

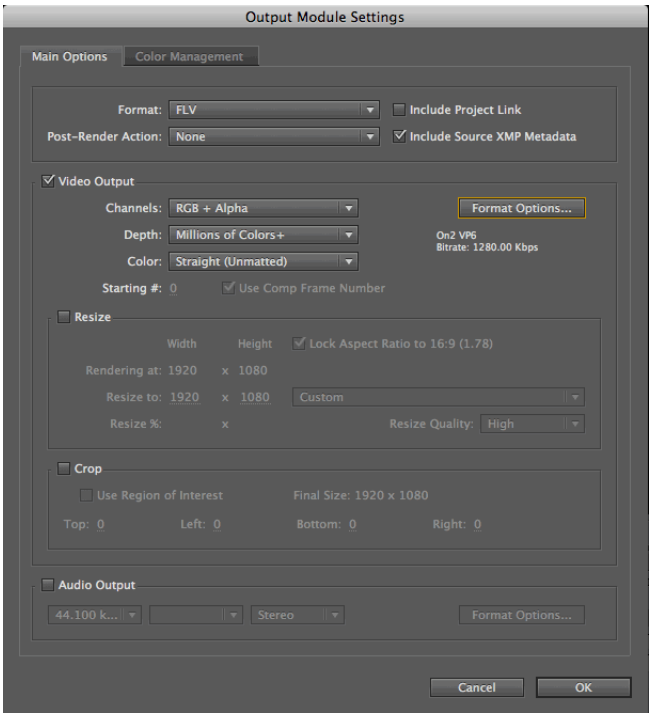


Figure 5–5: Output Module Settings Dialog Box

9. In the **Video Output** area, from the **Color** drop-down menu, select **Straight (Unmatted)**.
10. In the **Video Output** area, click **Format Options** to open the **FLV Options** dialog box.

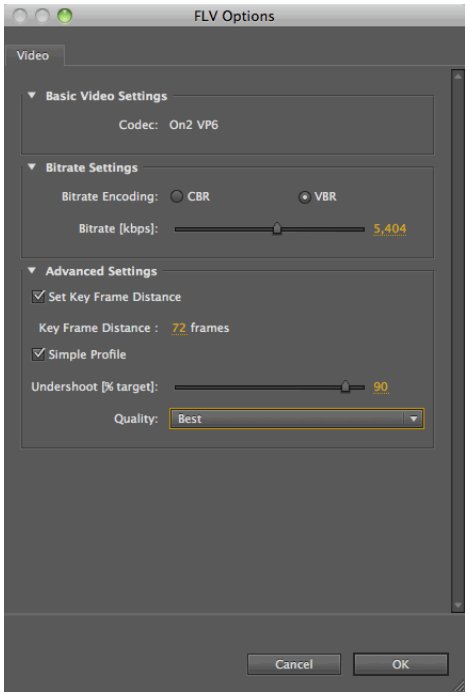


Figure 5–6: FLV Options Dialog Box

11. In the **Bitrate Settings** area, configure the following settings:
    a. Select **VBR** bitrate encoding.
    b. Set the **Bitrate** to 5,404 kbps.
12. In the **Advanced Settings** area, configure the following settings:
    a. Select the check box for **Set Key Frame Distance**, and set the **Key Frame Distance** to 72.
    b. Select the check box for **Simple Profile**.
    c. From the **Quality** drop-down menu, select **Best**.
13. If you want to include Audio with your file, make sure the **Audio Output** check box is selected, and click **Format Options**.
    a. Click the **Audio** tab.
    b. In the **Bitrate Settings** area, from the **Bitrate** drop-down menu, select **128** (default).
14. Click **OK** twice to close the **FLV Options** dialog box and the **Output Module Settings** dialog box.
15. Select the **Render Queue** tab, and double-click the **Output To** field to name the file.

NOTE: If the **Render Queue** tab is not available, click **Window** > **Render Queue**. The **Render Queue** tab will appear at the bottom of the screen.

16. Select the **Render** check box for your composition, and click **Render**.

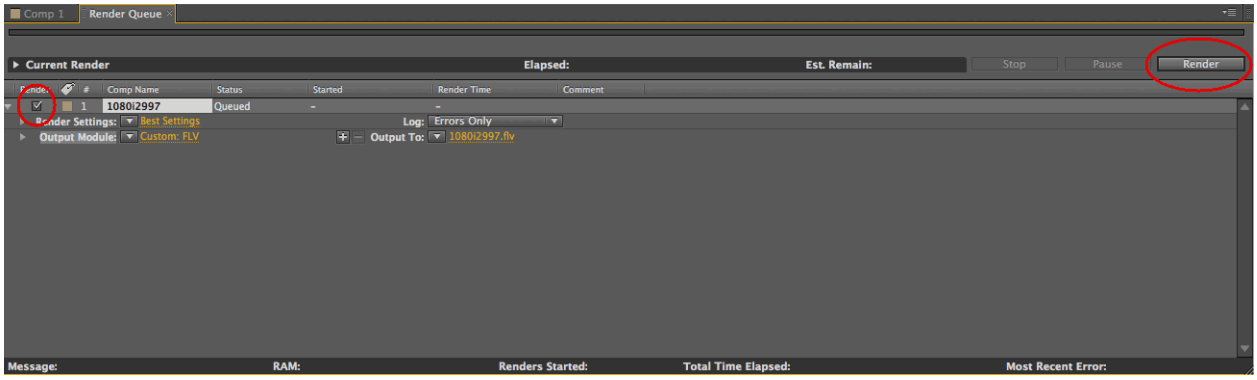


Figure 5–7: Render Check Box

17. When your encode is complete, copy the .flv file to your graphics directory (**gfx.dir**) on the video server.

After you copy the .flv file to the graphics directory (gfx.dir) on the video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

Creating an MPEG-4 File

MPEG-4 (.mp4) is a wrapper format for a video file that has been encoded with the H.264 encoding process. You can use Adobe Media Encoder or Adobe After Effects to encode a large sequence of image files (for example, .tga files) as an .mp4 file that can be played as a full-screen opaque graphic template or video on the ChannelPort.

Figure 5–8 shows a sample method of layering graphics on a ChannelPort using an .mp4 file and other template types.

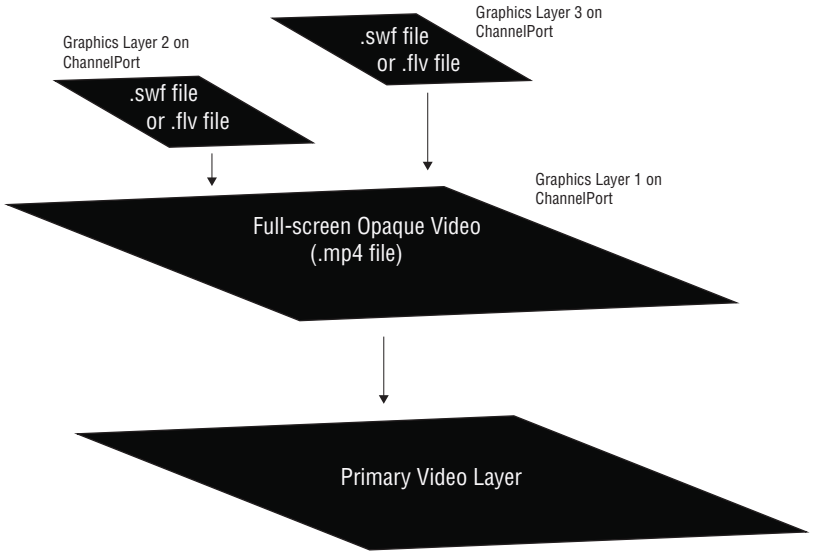


Figure 5–8: Layering .mp4 File

This section contains the following procedures:

- *Creating an MPEG-4 File Using Adobe Media Encoder*
- *Creating an MPEG-4 File Using Adobe After Effects*

Creating an MPEG-4 File Using Adobe Media Encoder

1. In Media Encoder, click **File** > **Add**, and choose the necessary file(s) from the **Open** dialog box.

NOTE: If you are adding an image sequence, in the **Open** dialog box, click the first file in the sequence, and select the **Enable Sequence** check box.

2. From the **Format** drop-down menu, select **H.264**.
3. From the **Preset** drop-down menu, select the appropriate resolution and frame rate, and click **OK**.
4. Click **H.264** to open the **Export Settings** dialog box, and in the **Export Settings** area, configure the following settings:
   a. Select the check box for **Export Video**.
   b. If you do not want to export audio with your file, clear the check box for **Export Audio**.
   c. Make sure the check box for **Open in Device Central** is cleared (default).

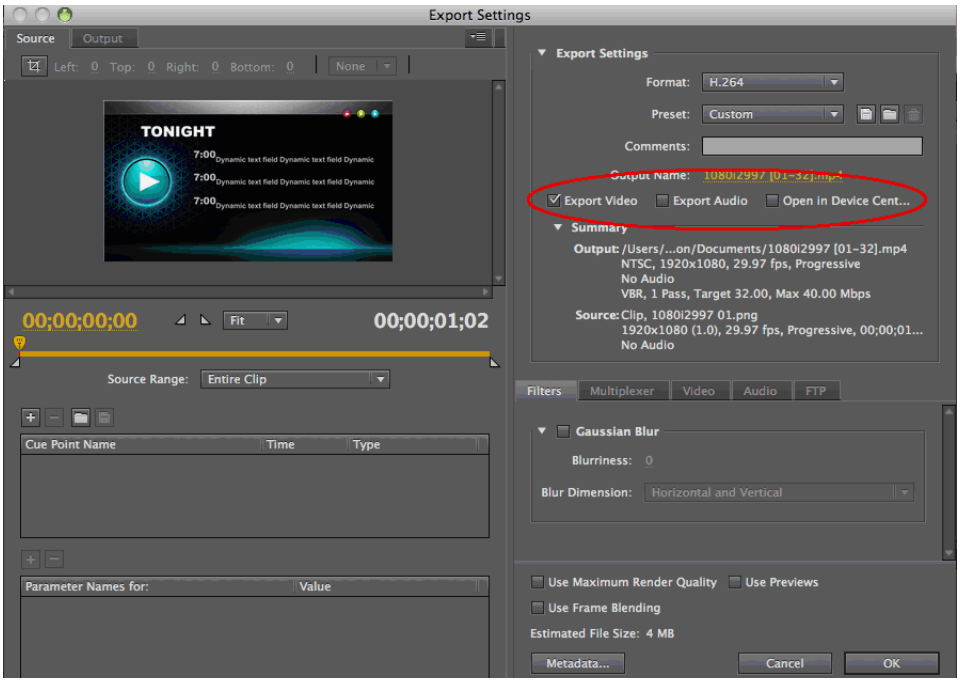


Figure 5–9: Export Settings Dialog Box

5. Select the **Filters** tab, and make sure the check box for **Gaussian Blur** is cleared (default).
6. Select the **Multiplexer** tab, and configure the following settings:
   a. From the **Multiplexing** drop-down menu, select **MP4**.
   b. From the **Stream Compatibility** drop-down menu, select **Standard**.

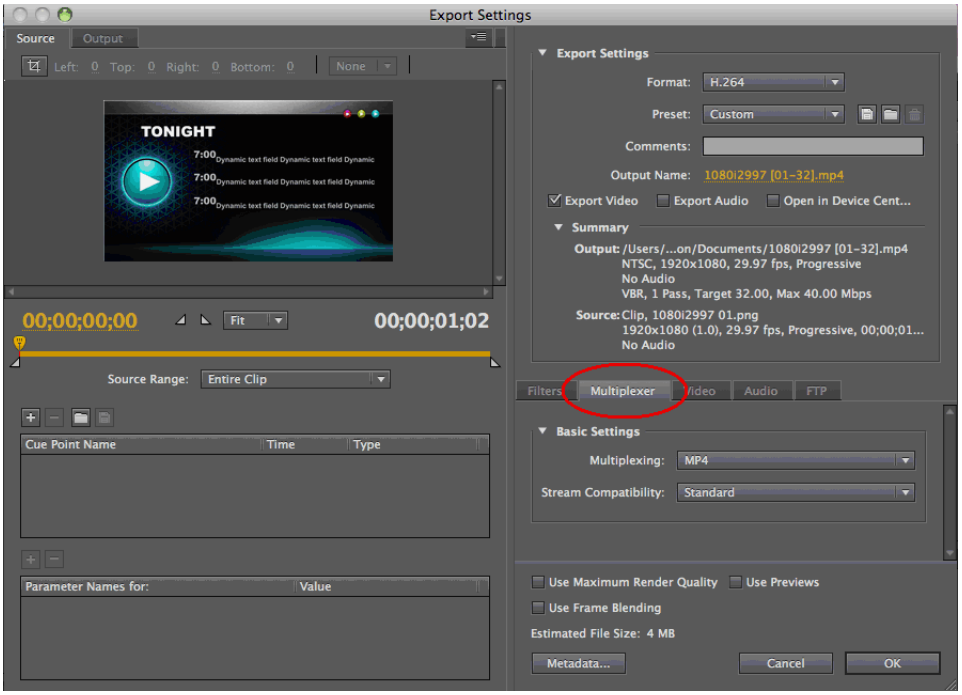


Figure 5–10: Multiplexer Tab

7. Select the **Video** tab, and configure the following settings:
   a. In the **Basic Video Settings** area, from the **Profile** drop-down menu, select **Main**.
   b. From the **Level** drop-down menu, select **4.1**.
   c. Make sure the check box for **Render at Maximum Depth** is cleared (default).
   d. In the **Bitrate Settings** area, from the **Bitrate Encoding** drop-down menu, select **VBR, 1 Pass**.
   e. Set the **Target Bitrate** to 32 Mbps.
   f. Set the **Maximum Bitrate** to 40 Mbps.
   g. In the **Advanced Settings** area, make the check box for **Set Key Frame Distance** is cleared (default).

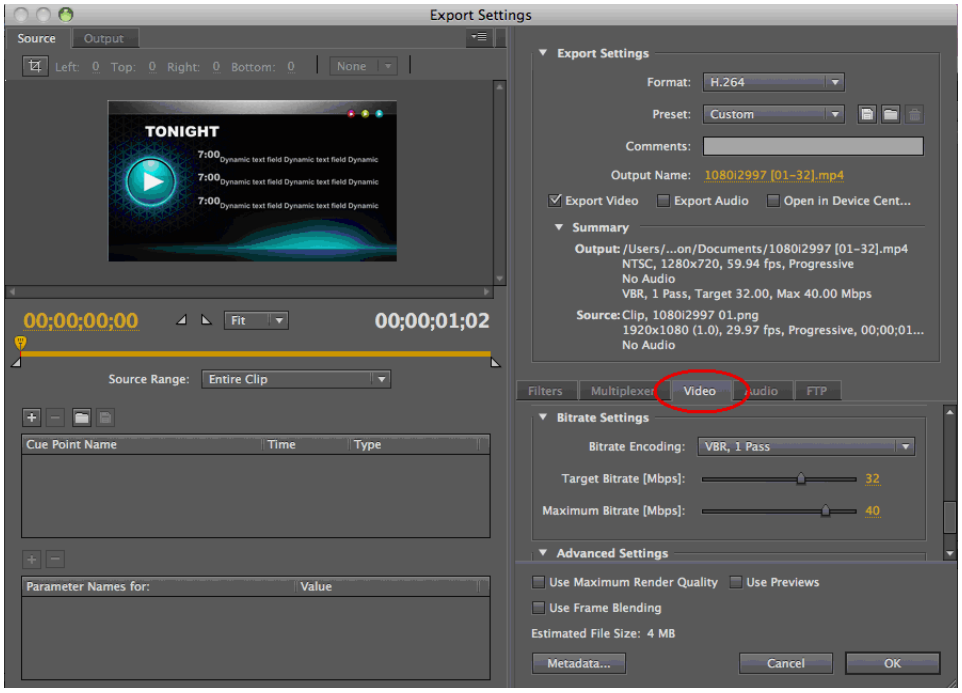


Figure 5–11: Video Tab

8. Click **OK**.
9. If you want to include Audio with your file, make sure the **Export Audio** check box is selected, click the **Audio** tab, and configure the following settings:
   a. In the **Audio Format Settings** area, for **Audio Format**, select **AAC** (default).
   b. In the **Basic Audio Settings** area, from the **Audio Codec** drop-down menu, make sure **AAC** is selected (default).
   c. From the **Sample Rate** drop-down menu, select **48000 Hz** (for best performance).
   d. From the **Channels** drop-down menu, select **Stereo** (default).
   e. From the **Audio Quality** drop-down menu, select **High** (default).
   f. In the **Bitrate Settings** area, from the **Bitrate** drop-down menu, select **56** (default).
   g. In the **Advanced Settings** area, for **Precendence**, select **Sample Rate** (default).
10. Click **OK**.
11. From the **Queue** area, click **Start Queue**.

    You can view the encode process from the **Current Encode** area.
12. When your encode is complete, copy the MPEG-4 file to your graphics directory (**gfx.dir**) on the video server.

After you copy the MPEG-4 file to the graphics directory (gfx.dir) on the video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

Creating an MPEG-4 File Using Adobe After Effects

1. In After Effects, select **Composition** > **New Composition**.
2. Select the appropriate resolution, frame rate, and duration, and click **OK**.

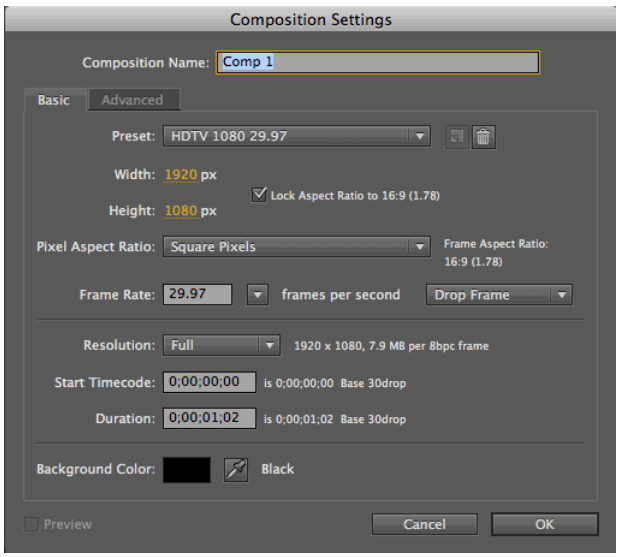


Figure 5–12: Composition Settings Dialog Box

3. Select **File** > **Import** > **File**.

NOTE: If you are adding an image sequence, in the **Open** dialog box, click the first file in the sequence, and select the **Enable Sequence** check box.

4. In the **Project** area, right-click the imported sequence, and select **Interpret Footage** > **Main** to open the **Interpret Footage** dialog box.
5. In the **Interpret Footage** dialog box, make sure the field for **Assume this frame rate** matches the frame rate configured in *Step 2*.
6. Drag your new composition to the **Render Queue** area.
7. From the **Output Module** drop-down menu, select **H.264**.
8. Click **H.264** to open the **Output Module Settings** dialog box, and configure the following settings:
   a. Select the check box for **Include Source XMP Metadata**.
   b. If you do not want to export audio with your file, clear the check box for **Audio Output**.

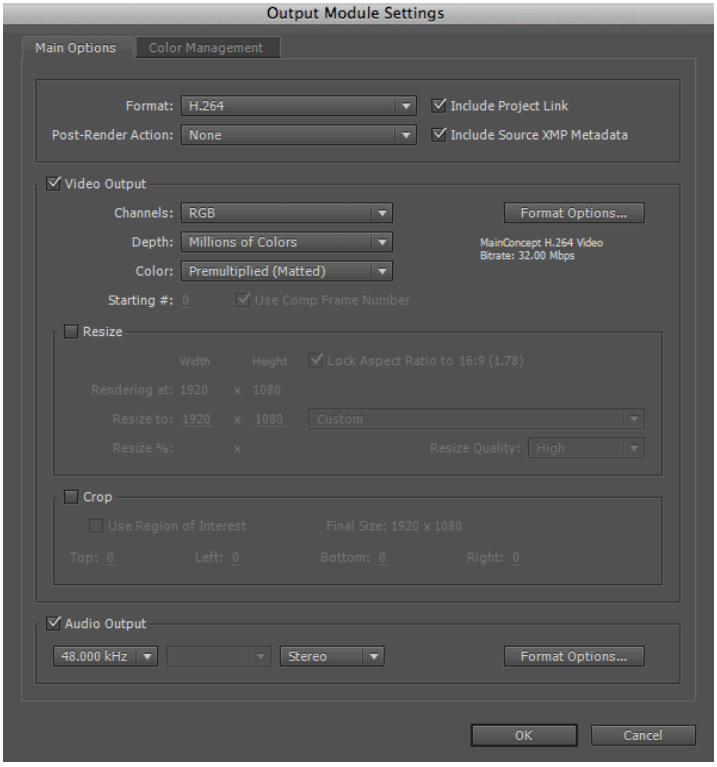


Figure 5–13: Output Module Settings Dialog Box

9. In the **Video Output** area, click **Format Options** to open the **H.264 Options** dialog box.
10. Click the **Multiplexer** tab, and configure the following settings:
    a. From the **Multiplexing** drop-down menu, select **MP4** (default).
    b. From the **Stream Compatibility** drop-down menu, select **Standard** (default).

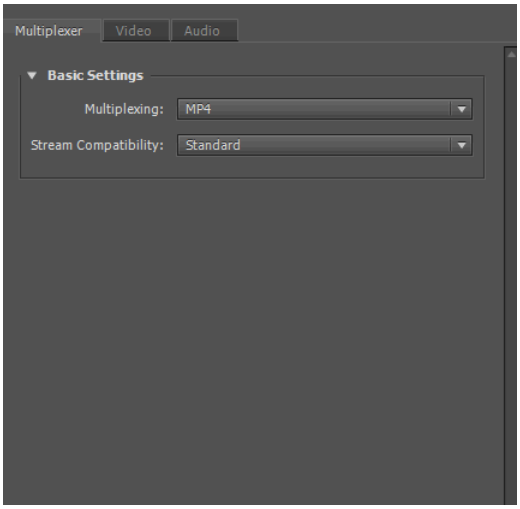


Figure 5–14: Multiplexer Tab

11. Click the **Video** tab, and configure the following settings:
    a. In the **Bitrate Settings** area, for **Bitrate Encoding**, select **VBR, 1 Pass**.
    b. For **Target Bitrate [Mbps]**, select **32**.

c. For **Maximum Bitrate [Mbps]**, select **40**.

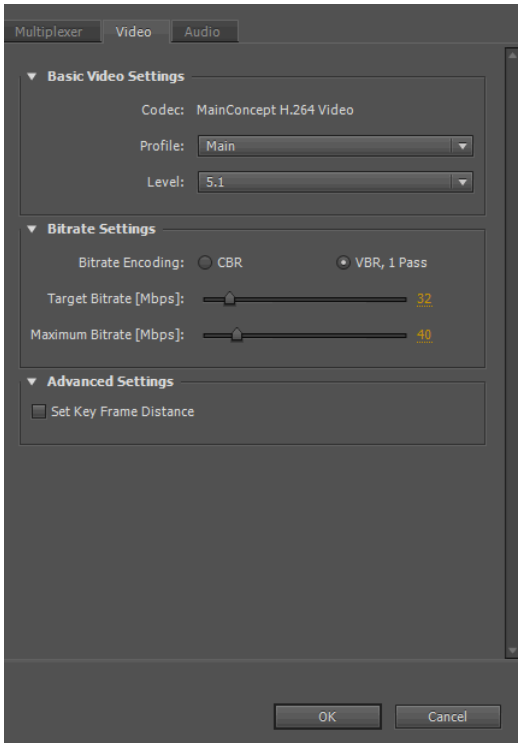


Figure 5–15: Video Tab

12. If you want to include Audio with your file, make sure the **Audio Output** check box is selected, and from the drop-down menu, select **48.000 KHz** (for best performance).
    a. Click **Format Options**.
    b. In the **Basic Audio Settings** area, from the **Codec** drop-down menu, select **AAC** (default).
    a. From the **Audio Quality** drop-down menu, select **High** (default).
    b. In the **Advanced Settings** area, for **Precedence**, select **Frequency**.
13. Click **OK** twice to close the **H.264 Options** dialog box and the **Output Module Settings** dialog box.
14. Select the **Render Queue** tab, and double-click the **Output To** field to name the file.

NOTE: If the **Render Queue** tab is not available, click **Window** > **Render Queue**. The **Render Queue** tab will appear at the bottom of the screen.

15. Select the **Render** check box for your composition, and click **Render**.
16. When your encode is complete, copy the .mp4 file to your graphics directory (**gfx.dir**) on the video server.

After you copy the .flv file to the graphics directory (gfx.dir) on the video server, it can be played on the ChannelPort. For information on configuring gfx.dir, refer to *Verifying and Creating the Graphics Directory on the Video Server* in *Chapter 1, Installation and Configuration Overview*.

Chapter 6
DVE Authoring for ChannelPort

This chapter contains the following sections:

This chapter describes how to create a template that controls a Digital Video Effect (DVE) that can be run on the ChannelPort. The template that controls the DVE must be authored using Adobe® Flash® Professional. Harmonic recommends starting with one of the blank Harmonic DVE templates that has been provided in the ChannelPort Template Authoring Guide.

NOTE: The procedures in this chapter refer to the blank Harmonic DVE template. A blank DVE template is supplied in each frame rate and raster size in the ChannelPort Template Authoring Package. For information about the Template Authoring Package, refer to *Chapter 2, Installing and Using the Template Authoring Package*.

Overview

A DVE is a video that has been cropped (in the Src Region), scaled and positioned (in the Dst Region), and composited with an underlying video.

When a DVE template is played on the ChannelPort, it can contain video from a clip, the Mixer output, or an SDI input. When you preview your DVE templates in the desktop Flash environment, the Src Preview represents the input to the DVE.

Figure 6–1 illustrates these concepts.

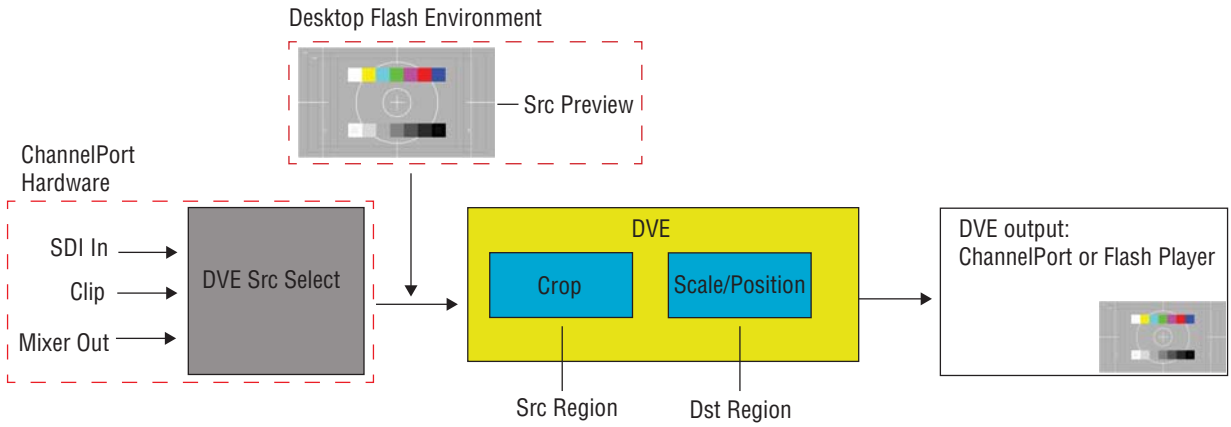


Figure 6–1: DVE Overview

The Source (Src) Preview, Source (Src) Region, and Destination (Dst) Region are discussed in detail in *About the Blank Harmonic DVE Template*.

About the Blank Harmonic DVE Template

The blank Harmonic DVE template contains four layers in the Flash Professional timeline, as shown in *Figure 6–2*.

The blank Harmonic DVE template also contains the Harmonic DVE Template Widgets: the Harmonic DVE Src Preview Region widget, the Harmonic DVE Src Region widget, and the Harmonic DVE Dst Region widget.

For more information about DVE widgets and the Harmonic Template Widget Library, refer to *About Harmonic Widgets* in *Chapter 2, Installing and Using the Template Authoring Package*.

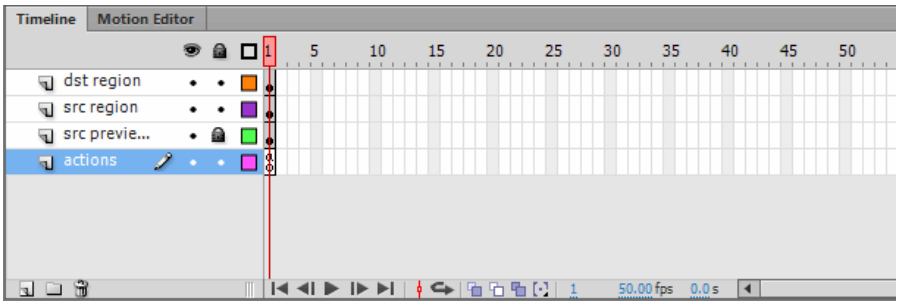


Figure 6–2: DVE Template Layers

IMPORTANT: In order for the DVE template to run correctly on the ChannelPort, the Src Region widget and the Dst Region widget must be present in the first frame of the template.

Please read through the following sections before getting started:

- *Actions Layer*
- *Src Preview Layer*
- *Src Region Layer*
- *Dst Region Layer*

Actions Layer

The **actions** layer contains ActionScript code that controls DVE properties. These properties are discussed in detail in *About DVE Template Properties*.

For instructions on editing the **actions layer**, refer to *Editing ActionScript to Control DVE Properties*.

Src Preview Layer

The **src preview** layer represents the input to the DVE; in other words, it represents the video that will be affected by the DVE template. In the sample Harmonic DVE templates, the **src preview** layer is represented by a test pattern, as shown in *Figure 6–3*.

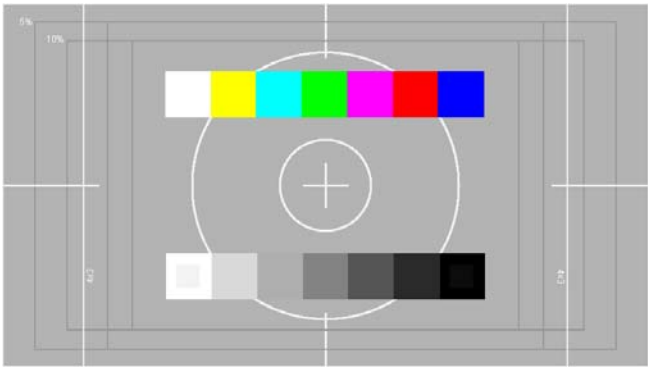


Figure 6–3: Src Preview Layer Test Pattern

Since the **src preview** layer is a preview of the input of the DVE, its screen resolution should match the screen resolution of the stage. Note that in each blank DVE template the **src preview** layer for each template is already properly configured for the corresponding raster size, and the layer is locked.

Src Region Layer

The **src region** layer represents the portion of the Src Preview that will be active in the DVE. Essentially, the Src Region is the result of the Src Preview being cropped.

IMPORTANT: The Src Region should never be larger than the Src Preview.

The following properties of the Src Region are used to crop the DVE:

- **x**: the x position of the crop
- **y**: the y position of the crop
- **Width**: the width of the crop region
- **Height**: the height of the crop region

These properties can be accessed by clicking **Window** > **Properties**, and then selecting the **src region** layer.

Figure 6–4 shows a Src Region cropped to the center 4 × 3 region of a 16 × 9 input.

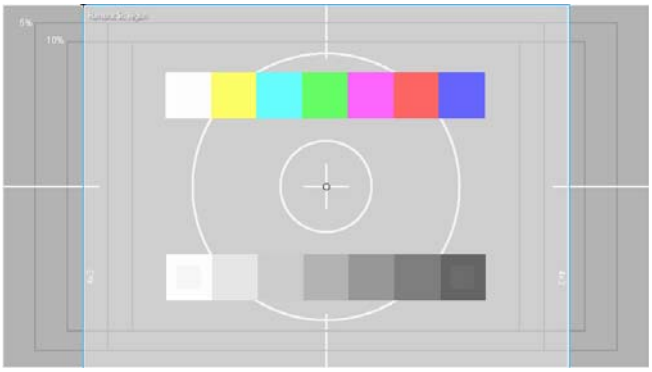


Figure 6–4: Cropped Src Region

For instructions on configuring the SRC Region to crop a DVE, refer to *Using Blank Harmonic DVE Templates*.

Once the Src Region of the DVE is defined, it can be scaled and positioned in the Dst Region.

IMPORTANT: If your primary graphics format is NTSC, there may be closed captioning (CC) present on line 21 of SDI input or from IMX clips. The full 486 line Src Region will include these lines. To avoid including these lines in the DVE, crop off the top three lines of the source using the Src Region. Line 0 is above the CC. Line 1 corresponds to line 21, and line 2 corresponds to line 284 (CC in field 2).

To crop the top three lines of the source, in the **Properties** dialog box for both the Src and Dst Regions, change the **Y axis** value to **3** and the **Height** value to **483**.

Dst Region Layer

The **dst region** layer defines how the Src Region is scaled and positioned in the DVE template.

IMPORTANT: The Dst Region should never be larger than the Src Region.

The following properties of the Dst Region are used to scale and position the DVE:

- **x**: the x position of the scaler output
- **y**: the y position of the scaler output
- **Width**: the width of the scaler output
- **Height**: the height of the scaler output
- **Alpha**: the alpha value of the DVE

These properties can be accessed by clicking **Window** > **Properties**, and then selecting the Dst Region layer.

Figure 6–5 shows the Dst Region of the 4 × 3 Src Region from the previous example scaled and positioned in the lower right-hand corner of the screen.

NOTE: The Dst Region layer is marked by a blue transparency. If necessary, this layer can be hidden until you are ready to use it. In the timeline, select the Dst Region layer, and click the show/hide button under the eye.

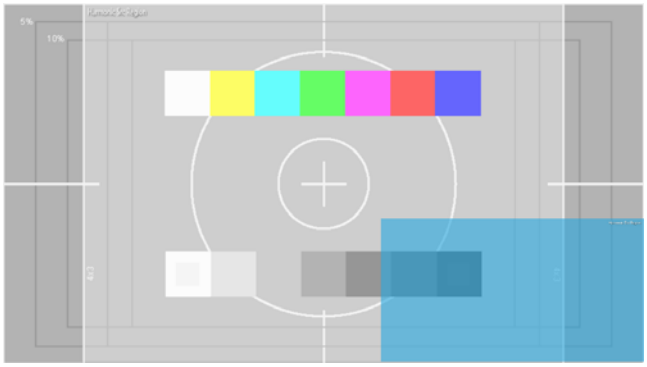


Figure 6–5: Dst Region Scaled and Positioned

For instructions on scaling and positioning the Dst Region, refer to *Using Blank Harmonic DVE Templates*.

Once the Src Region is cropped and the Dst Region is scaled and positioned, a DVE is created. *Figure 6–6* shows the cropped, scaled, and positioned DVE from the examples above as seen in the desktop Flash environment.

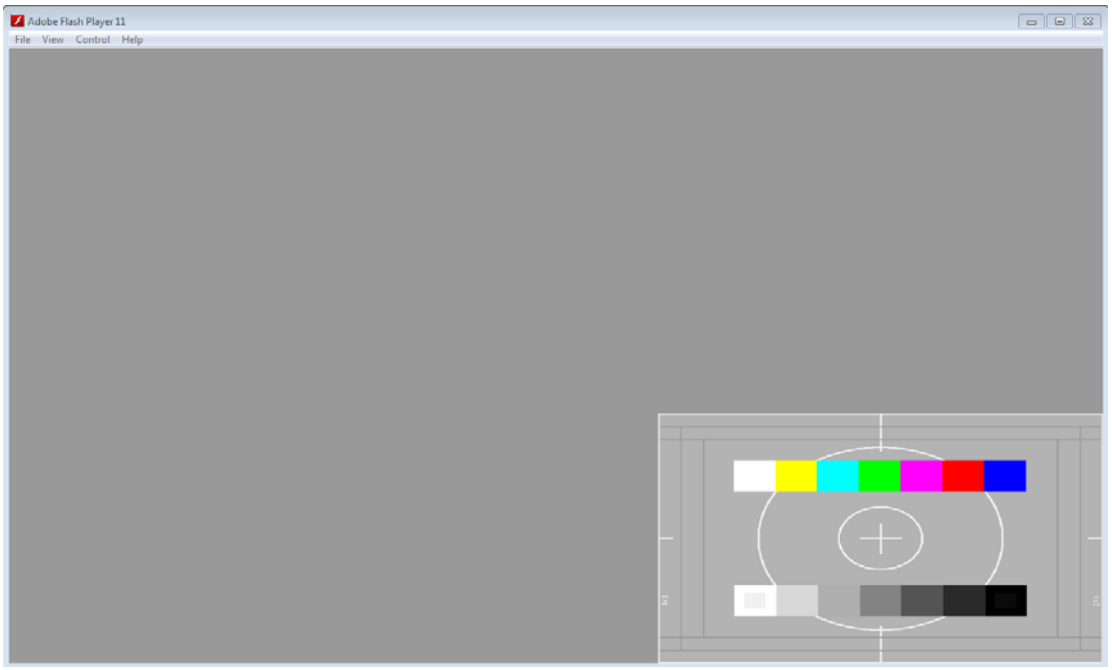


Figure 6–6: DVE Output Over Video

Using Blank Harmonic DVE Templates

The Template Authoring Package contains blank Harmonic DVE .fla files you can modify for your DVE project. After a blank Harmonic DVE .fla file is published as a .swf file and copied to the graphics directory (gfx.dir) on the video server, it can be played on the ChannelPort.

NOTE: The Template Authoring Package also contains sample Harmonic DVE templates you can view. Refer to *About Sample Harmonic Templates* in *Chapter 2, Installing and Using the Template Authoring Package* for more information about sample Harmonic templates.

The following procedure explains how to use a blank Harmonic DVE .fla file to crop a 16:9 image to a 4:3 image and position that on the bottom right corner of the screen, as discussed in *About the Blank Harmonic DVE Template*.

IMPORTANT: Before using an Harmonic template, verify your raster size and frame rate.

To use a sample Harmonic DVE template:

1. From the Template Authoring Package, open the **Samples** folder.
2. Open the **Sources** folder.
3. Open the folder for the raster size and frame rate you want to work in, and copy the **blank-dve** .fla file from that folder to the **Project** folder.
4. In Flash Professional, open the **blank-dve** .fla file you copied to the **Project** folder.

NOTE: To hide the Dst Region until you are ready to configure it, in the timeline, click the show/hide button under the eye.

5. Crop the Preview layer to a 4 × 3 Src Region.
   a. In the timeline, click **src region**.
   b. On the Flash stage, select the SRC Preview.
   c. Click and drag the corner of the free transform box to set the 4 × 3 area.
6. In the timeline, for all layers but **actions**, right-click the final frame of the DVE, and select Insert Frame.

   The final frames of the DVE will appear, as shown in *Figure 6–7*.

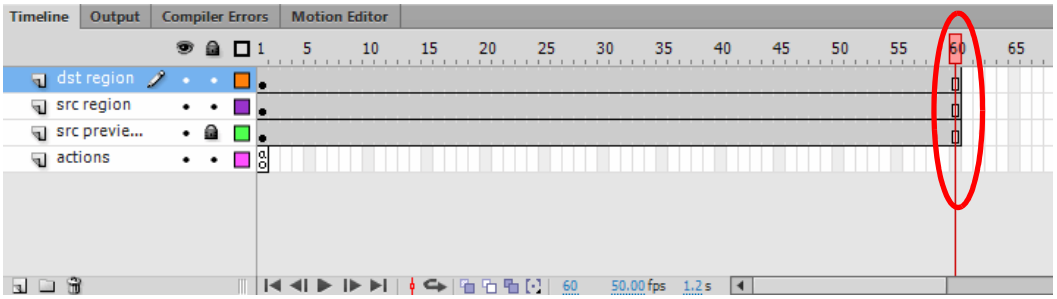
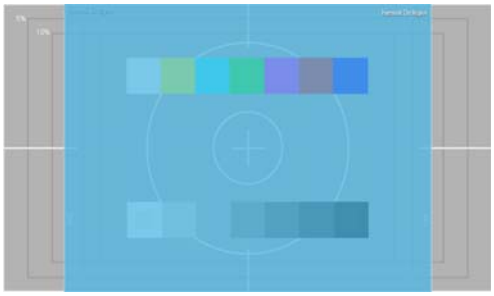


Figure 6–7: Setting Final Frames of DVE

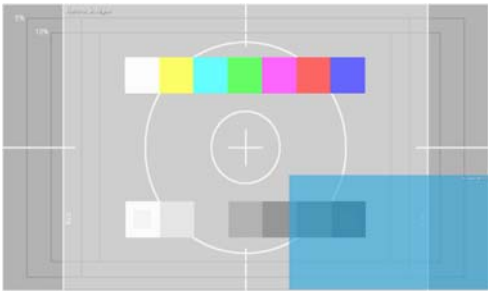
7. In the timeline, click **dst region**.

NOTE: If the Dst Region was previously hidden, in the timeline, click the show/hide button under the eye.

8. In the timeline of the **dst region** layer, right-click the timeline, and select **Create Motion Tween.**
9. Click and drag the blue transparency to animate, or scale and position, the Dst Region, as illustrated by *Figure 6–8*.



Before scaling and positioning



After scaling and positioning

Figure 6–8: Scaling and Positioning the Dst Region

NOTE: The Dst Region can also be scaled and positioned using the **Properties** dialog box. Click **Windows** > **Properties**, and the select the Dst Region layer.

10. If you have not already done so, save your file.
11. Click **File** > **Publish** to publish your file as a .swf file.

    The published .swf file will be saved to the **Project** folder.
12. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server to preview it using Fxtool or PreviewTool.

NOTE: Unless you change the properties of the Actions layer, the DVE template will display the SDI Input the first time it is played on the ChannelPort. For instructions on changing the properties of the Actions layer, refer to *Configuring Additional DVE Template Properties*.

Viewing DVE Templates

Like any other templates authored to play on the ChannelPort, DVE templates can be viewed using FXTool and PreviewTool.

For instructions on installing, configuring, and using FXTool and PreviewTool to view templates, refer to the *ChannelPort Tools User Guide*.

Before copying DVE templates to the graphics directory, DVE templates can be previewed in the Flash environment, as previously discussed in this chapter. Note that when previewed in the Flash environment, the DVE input will be represented by the test pattern of the Src Preview.

Configuring Additional DVE Template Properties

The Harmonic DVE template contains ActionScript code that can be edited to control various properties of the DVE template. These properties, discussed in *About DVE Template Properties*, include:

- *enable*
- *srcSelect*
- *enableHPT*
- *dveBlendMode*
- *stackPos*

The following section provides instructions on accessing and editing the ActionScript code to control these DVE properties.

Editing ActionScript to Control DVE Properties

To edit the ActionScript code:

1. From the Template Authoring Package, open the **Samples** folder.
2. Open the **Sources** folder.
3. Open the folder for the raster size and frame rate you want to work in, and copy the **blank-dve** .fla file from that folder to the **Project** folder.
4. In Flash Professional, open the **blank-dve** .fla file you copied to the **Project** folder.
5. Edit your DVE template as desired.
6. In the DVE template timeline, on the **actions** layer, right-click the first frame, marked by the “a,” as shown in *Figure 6-9*.

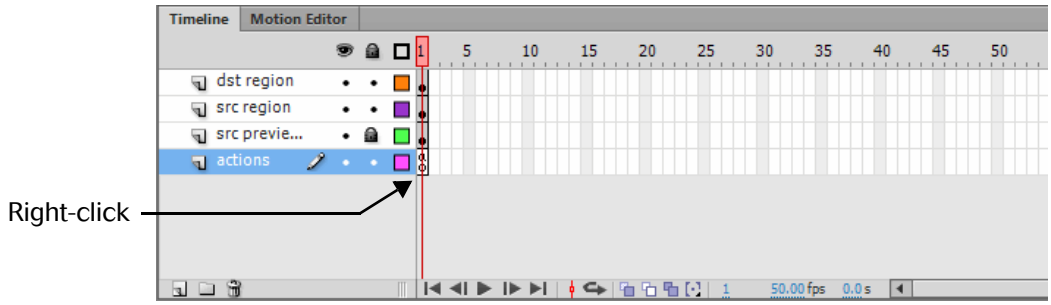


Figure 6–9: Accessing ActionScript from the actions Layer

7. Select **Actions**.

NOTE: You can also access the ActionScript by selecting the **actions** layer and then **Window** > **Actions**.

An ActionScript file will appear, as show in *Figure 6–10*.

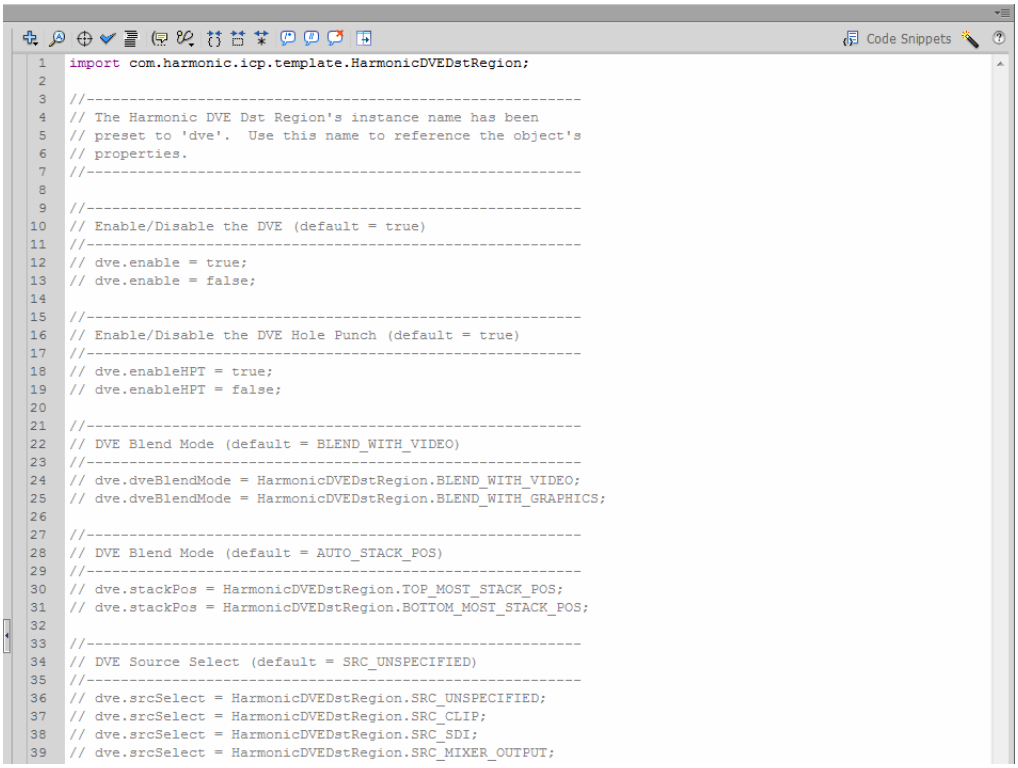


Figure 6–10: DVE Template ActionScript

8. To edit a property of the DVE template, remove the comments in front of that property, as shown in *Figure 6–11*.

```
//------------------------------------------------------------
// Enable/Disable the DVE (default = true)
//------------------------------------------------------------
// dve.enable = true;
// dve.enable = false;

//------------------------------------------------------------
// Enable/Disable the DVE Hole Punch (default = true)
//------------------------------------------------------------
// dve.enableHPT = true;
dve.enableHPT = false;

//------------------------------------------------------------
// DVE Blend Mode (default = BLEND_WITH_VIDEO)
//------------------------------------------------------------
// dve.dveBlendMode = HarmonicDVEDstRegion.BLEND_WITH_VIDEO;
// dve.dveBlendMode = HarmonicDVEDstRegion.BLEND_WITH_GRAPHICS;

//------------------------------------------------------------
// DVE Blend Mode (default = AUTO_STACK_POS)
//------------------------------------------------------------
// dve.stackPos = HarmonicDVEDstRegion.TOP_MOST_STACK_POS;
// dve.stackPos = HarmonicDVEDstRegion.BOTTOM_MOST_STACK_POS;
```

Figure 6–11: Editing the ActionScript

In this example, the boolean value for enabling/disabling the DVE Hole Punch Technology (HPT) has been edited to "false." In this case, the HPT is disabled.

NOTE: The ActionScript code has been commented to reveal the default values for each property.

9. Close the ActionScript window.
10. If you have not already done so, save your file.
11. Click **File** > **Publish** to publish your file as a .swf file.

    The published .swf file will be saved to the **Project** folder.
12. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server to preview it using FXTool or PreviewTool.

About DVE Template Properties

Each DVE template property can be accessed and edited in the ActionScript of the DVE template, as described in *Editing ActionScript to Control DVE Properties*.

enable

This DVE property is a boolean property (True or False) that enables/disables the DVE.

- **True**: the DVE is enabled.
- **False**: the DVE is disabled.

By default, this property is enabled.

srcSelect

This DVE property controls the input source of the DVE.

- **SRC_UNSPECIFIED**: the source is unspecified.
- **SRC_CLIP**: the source is a clip.
- **SRC_SDI**: the source is SDI input.
- **SRC_MIXER_OUTPUT**: the source is the mixer output.

By default, this property is set to SRC_UNSPECIFIED. However, the first time a DVE template is used, it will display the SDI input.

enableHPT

This DVE property is a boolean property that enables/disables the DVE Hole Punch Technology (HPT).

- **True**: the DVE HPT is enabled.
- **False**: the DVE HPT is disabled.

About enableHPT

When a DVE template is loaded on a graphics layer, a region in all the graphics layers below that template is cleared so that the DVE can be seen. This functionality is called Hole Punch Technology (HPT).

For example, refer to *Figure 6–12*. If a DVE template is loaded on ChannelPort graphics layer 3 with HPT enabled, a transparent region will be created in graphics layer 2 and1. Essentially graphic layers 2 and 1 will be "under" the DVE and thusly not visible. Any templates placed on graphic layers 4 through 8 will be visible "above" the DVE.

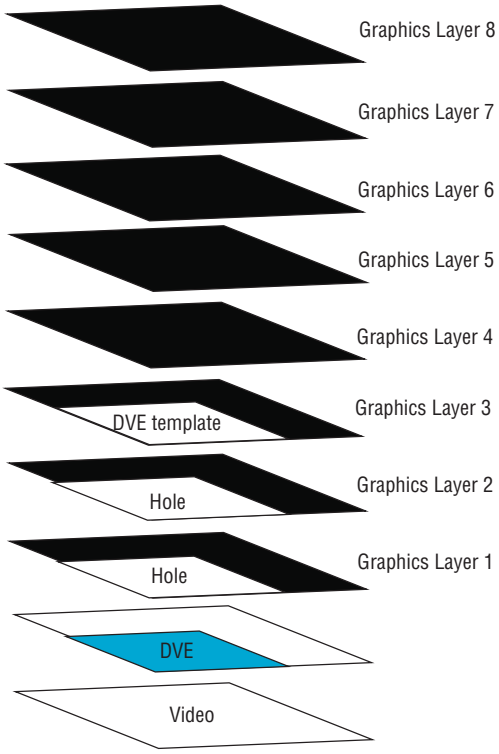


Figure 6–12: DVE HPT Enabled

By default, this property is set to "True" (enabled).

dveBlendMode

This DVE property controls how alpha is applied to the DVE.

- **BLEND_WITH_VIDEO**: the alpha value of the Dst Region is applied to the DVE and affects how the DVE blends with the underlying video.

For example, if a DVE template is loaded on ChannelPort graphics layer 1, and the dveBlendMode is set to BLEND_WITH_VIDEO, the DVE will blend with the video layer. The amount of blending is dependent on the alpha value set on the Dst Region, as shown in *Figure 6–13*.

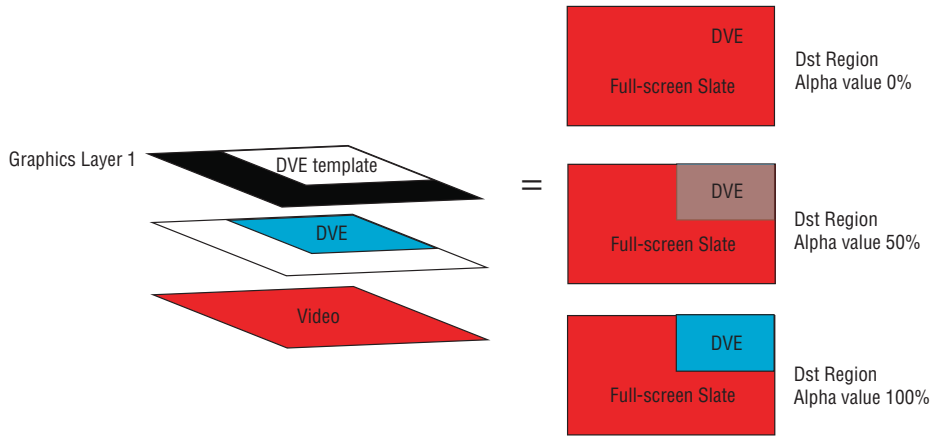


Figure 6–13: DVE Blend with Video Enabled

- **BLEND_WITH_GRAPHICS**: the inverse of the alpha value of the Dst Region is applied to the DVE, and the inverse of the alpha value is applied to the regions of the lower layers affected by the DVE. The DVE alpha value is set to 100% to achieve a semi-transparent DVE over graphics.

  For example, if a DVE template is loaded on ChannelPort graphics layer 2, and the dveBlendMode is set to BLEND_WITH_GRAPHICS, the DVE will blend with the full-screen slate loaded on graphics layer 1, and the video layer will be totally obscured. The amount of blending is dependent on the alpha value set on the Dst Region, as shown in *Figure 6–14*.

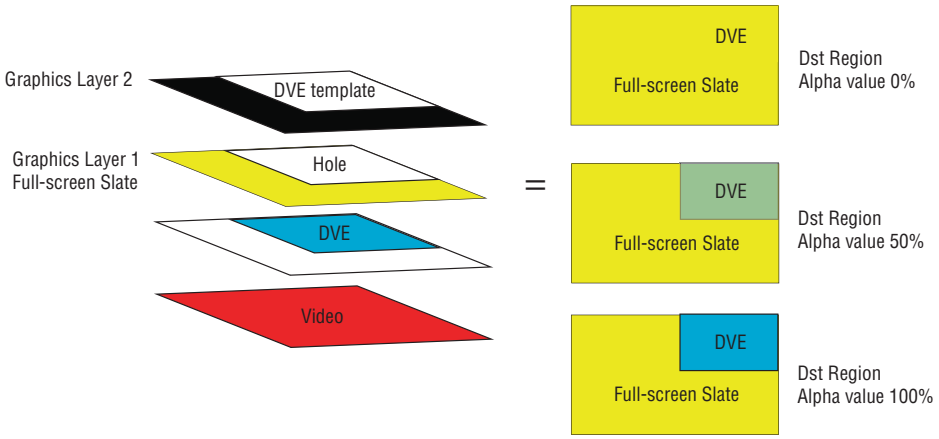


Figure 6–14: DVE Blend With Graphics Enabled

By default, this property is set to BLEND_WITH_VIDEO.

NOTE: To control the alpha value when authoring a DVE, click the Dst Region on the Flash stage, and then click **Windows** > **Properties** > **Color Effect**, and from the **Style** drop-down menu, select **Alpha**.

stackPos

This DVE property controls where the DVE is located relative to other graphics in the template.

- AUTO_STACK_POS: the DVE will be positioned depending on where the DST Region layer is located in the timeline of the template.
- BOTTOM_MOST_STACK_POS: the DVE will be positioned below all other graphics in the template. Any graphics above the DVE will be seen.
- TOP_MOST_STACK_POS: the DVE will be positioned above all other graphics in the template. Any graphics below the DVE will not be seen.

By default, this property is set to AUTO_STACK_POS.

For example, in the blank Harmonic DVE template, the DST Region is by default the first layer in the timeline, as shown in *Figure 6–15*.

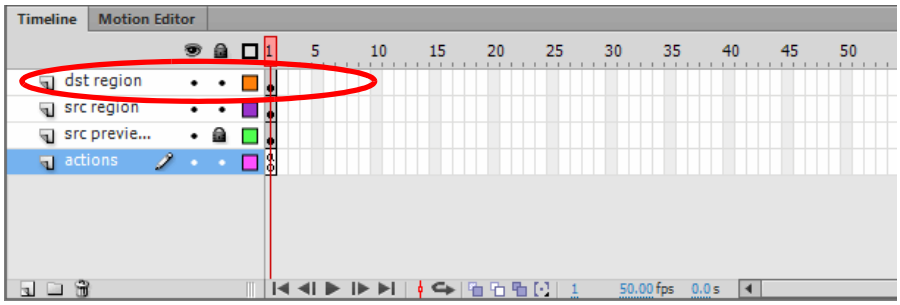


Figure 6–15: DST Region in Template Timeline

If no changes are made, the DST Region will be set by the auto-stack property to the TOP_MOST_STACK_POS. If a new layer is placed above the DST Region, the DST Region will be set by the auto-stack property to the BOTTOM_MOST_STACK_POS.

The stackPos property can be used to create a border on a DVE or to create a full-screen slate reveal.

Creating a Border on a DVE

A DVE template can be authored to contain a border around the DVE. This border graphic must be contained in a separate layer on the timeline of the DVE template. The Dst Region should be set to the bottom-most stack position.

To create a border on a DVE:

1. From the Template Authoring package, open the **Samples** folder.
2. Open the **Sources** folder.
3. Open the folder for the raster size and frame rate you want to work in, and copy the **blank-dve** .fla file from that folder to the **Project** folder.
4. In Flash Professional, open the **blank-dve** .fla file you copied to the **Project** folder.
5. Edit and animate (scale and position) the Dst Region as desired.
6. Right-click the first frame of the **actions** layer, and select **Actions**. An ActionScript file will open.
7. In the ActionScript file, remove the comments in front of the entry for **BOTTOM_MOST_STACK_POSITION**.
8. In the timeline, create a new layer above the Dst Region layer, and call it "border."

9. Edit and animate the border to match the editing and animation of the Dst Region.
10. If you have not already done so, save your file.
11. Click **File** > **Publish** to publish your file as a .swf file.

    The published .swf file will be saved to the **Project** folder.
12. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server to preview it using FXTool or PreviewTool.

When this DVE template is played, the border will appear above the DVE.

Creating a Full-screen Slate Reveal

A DVE template can be authored to reveal a full-screen slate. The Dst Region should be set to the top-most stack position.

To create a full-screen slate reveal:

1. From the Template Authoring package, open the **Samples** folder.
2. Open the **Sources** folder.
3. Open the folder for the raster size and frame rate you want to work in, and copy the **blank-dve** .fla file from that folder to the **Project** folder.
4. In Flash Professional, open the **blank-dve** .fla file you copied to the **Project** folder.
5. Edit and animate (scale and position) the Dst Region as desired.
6. Right-click the first frame of the **actions** layer, and select **Actions**. An ActionScript file will open.
7. In the ActionScript file, remove the comments in front of the entry for **TOP_MOST_STACK_POSITION**.
8. If you have not already done so, save your file.
9. Click **File** > **Publish** to publish your file as a .swf file.

   The published .swf file will be saved to the **Project** folder.
10. Copy the .swf file from the **Project** folder to your configured graphics directory (**gfx.dir**) on the video server to preview it using FXTool or PreviewTool.

IMPORTANT: When using FXTool or PreviewTool to preview the full-screen slate reveal, place the DVE template on a layer above the full-screen slate template.

Chapter 7
ChannelPort Authoring Guidelines

Performance Guidelines Overview

The following sections provide guidelines and troubleshooting tips for authoring graphics that play correctly on the ChannelPort.

- *Performance Considerations*
- *Performance Evaluations*
- *Troubleshooting Tips*

Unlike a video clip, graphics designed to play on the ChannelPort are a collection of assets and instructions, created with Adobe® Flash® Professional, Adobe Media Encoder, or Adobe After Effects® that are interpreted by a Flash renderer running on the ChannelPort.

When you author graphics for the ChannelPort, the "look" of an animation can be achieved with different methods, but the best method is not always obvious. Simple changes can have dramatic effects on the rendering times of your graphics.

In general, for your animation to play smoothly, your animated content should:

- render completely within a frame time, and
- maintain its frame rate over time.

About the Flash Renderer Types

The Flash renderers in a ChannelPort behave differently than Flash renderers on a desktop program or browser plug-in. Desktop and browser-based Flash renderers have non-constant, wide-ranging frame rates and capabilities. The Flash renderer on a ChannelPort has a stage frame rate that is strictly controlled by the field rate of the primary video format.

When authoring graphics to play on the ChannelPort, please note the following:

- Changing the stage frame rate within ActionScript will have no effect on the graphic when it is played on the ChannelPort.
- When the template receives the `ENTER_FRAME` event, the template will play at 59.94 Hz for 525 versions of 1080i, 720p, SD, and 16 × 9 SD or at 50 Hz for 625 versions of 1080i, 720p, SD, and 16 × 9 SD, no matter what other settings you specify in Flash Professional or in the ActionScript.

Performance Considerations

Before you author graphics to play on the ChannelPort, consider the following factors that will affect performance:

- The size of the screen area your animation will use
- The complexity of your animation
- The types of elements used within your animation
- Additional effects applied to elements within the animation (for example, masks, filters, or pixel benders)

When you load several layers of templates on the ChannelPort, each active layer is interpreted by independent renderers that all share access to the same CPU and memory resources. When animations on different layers have the same processing and rendering times, some layer-to-layer interference effects may be observed.

Graceful Degradation

If you load a template onto a layer on the ChannelPort that requires more than a frame time to render, the ChannelPort is designed to gracefully degrade displaying the content. In other words, if a layer is expected to produce a new image every frame time, the content of the template will repeat until new content has been rendered. This can happen when one or more templates have been loaded on layers on the ChannelPort.

Please note the following guidelines for minimizing visible degradation in your animated templates:

- If templates change very little or not at all (for example, a static regulatory template in the corner of the screen), degradation is undetectable.
- If templates contain objects that move quickly, degradation is less noticeable.
- If templates use animation at a constant rate, degradation may appear as a “stutter” or “glitch.” These “stutters” or “glitches” are momentary changes in the frame rate of the animation.
- If your animated template is authored at a constant rate, animate the template at an integer multiple of pixels per frame time. Moving at exactly one pixel or less per frame time is noticeable if any degradation occurs in the animation.
- If possible, use as few high-contrast objects that move at constant rates as possible. Try to keep the animation running within a frame time.
- If possible, fade in and fade out to animate objects in your template rather than animating them at a constant fixed rate.
- If possible, apply ease-in and ease-out on any motion-based tween.

Many factors apply when developing animation with little to no degradation, but a full discourse on motion perception and animation is outside the scope of this document. For additional information, please refer to the following sources:

- *http://en.wikipedia.org/wiki/Animation*
- *http://en.wikipedia.org/wiki/Motion_perception*
- *http://en.wikipedia.org/wiki/12_basic_principles_of_animation*
- “Advanced Character Animation in Flash”
  - *http://www.adobe.com/devnet/flash/articles/adv_char_anima.html*
- “A Primer on Animation Techniques”
  - *http://www.albinoblacksheep.com/flash/animationprimer*

Best Practices for Great Performance

- If you need a solid area of color, use a rectangular fill. Rectangular fills render faster than static bitmap images (for example, .jpeg files, .gif files, and .png files).
- If you need a gradient, use a gradient rather than an image of a gradient. In other words, author a gradient in Flash Professional rather than using a pre-rendered bitmap image of a gradient.

- If you do not need per-pixel alpha in your bitmap objects, use a 24-bit .png file rather than a 32-bit .png file.
- If you do not need a mask applied to an object, do not use one. Filters affect the amount of time it takes an object to render.
- If you are importing static images to your project, and if during animation those images may be transformed or scaled, you may want to select "Allow Smoothing" for better quality when the animation is rendered. This will affect the amount of time it takes to render the image.
- If you are importing static images to your project, you may want to select "Lossless Encoding" for better quality when the animation is rendered.
- Embed any fonts you intend to use in your template. This will ensure that they render correctly on the ChannelPort.
- If you author your animation based on time rather than on every ENTER_FRAME event, your animations appear will appear to run more smoothly over non-constant frame rates if your content rendering time is near the edge of a frame time boundary.
- If your template takes too long to render, spread your template across two or more active loaded layers. Render operations on one layer are single-threaded.
- If one method of authoring a template performs poorly, do not be afraid to try different a different method.

About the Pixel Area of a Template

When you play a template on the ChannelPort, instructions within the template tell the ChannelPort how and when pixels of the template are rendered. Rendering performance varies with content and has a complicated relationship with each component of a template.

Templates that do not change from frame to frame are very easy and efficient to render. The primary exception to that rule is when you are fading a layer up or down. In such cases, every change in alpha for that layer will cause the ChannelPort to redraw all the content currently on the screen.

You can estimate the performance of your template by considering the total pixel area of your template. Objects that cover smaller areas of the screen render faster than objects that cover larger areas of the screen. For example, changing the color of a 10 × 10 rectangle is always faster than changing the color of a 1920 × 1080 rectangle, no matter how either rectangle was authored.

Audio Performance

ChannelPort supports the following audio formats:

- .aiff files
- .wav files

For the best performance of these audio formats, Harmonic recommends the following encoding configuration:

- Up to 16 channels
- 24 bits
- 48 KHz

You can also export audio in Flash video (.flv) and H.264-encoded MPEG-4 (.mp4) files created with Adobe Media Encoder and After Effects®, as discussed in *Chapter 5, Creating Flash Videos and MPEG-4 Files for ChannelPort*.

For the best performance of these formats, Harmonic recommends the following encoding configuration:

- .flv: 128 kbps (.mp3 bitrate)
- .mp4: 48 KHz (for best processing), 44.1KHz, or 32 KHz, 2 channels, AAC audio

Performance Evaluations

The following performance evaluations are only relevant to tests performed on the ChannelPort when one layer was active across channels A and B. Tests were performed using a solid fill, gradient fills, static bitmaps, embedded videos, and text. All tests were performed at 1080i at 59.94 Hz.

Please note that different templates will have different rendering times.

Solid Fill

A solid fill is fully opaque fill of a rectangular area of the screen.

Figure 7–1 shows solid fill that uses 10% of the bottom area of the screen.

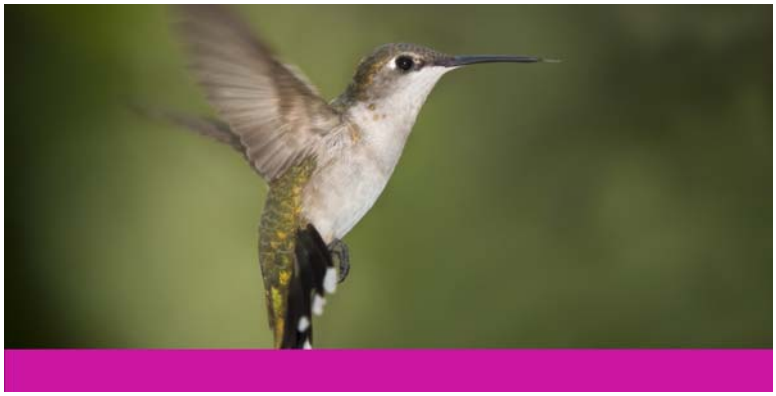


Figure 7–1: Solid Fill of 10% of Screen (Bottom)

Figure 7–2 shows a solid fill that uses 10% of the left side of the screen.

Figure 7–2: Solid Fill of 10% of Screen (Left)

Figure 7–3 shows a solid fill that uses 10% of the center of the screen.

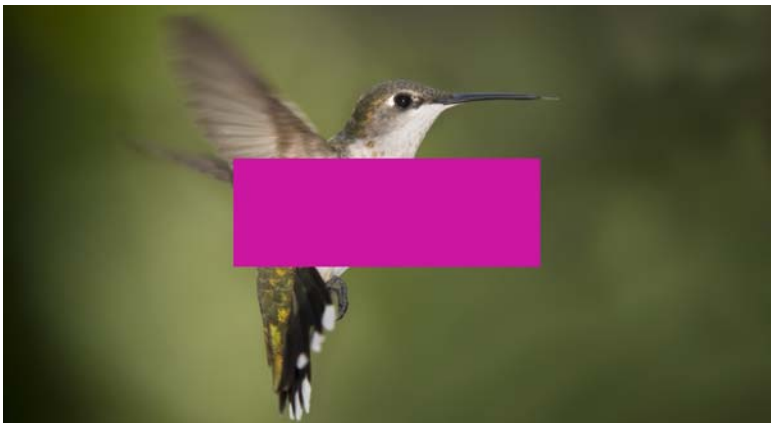


Figure 7–3: Solid Fill of 10% of Screen (Center)

Table 7–1 shows the average time, in milliseconds, it takes to render a solid fill (two channels, single layer, 1080i at 59.94Hz).

Table 7–1: Two Channel Solid Fill (1080i at 59.94 Hz)

Percent (%) of Screen	Time in Milliseconds (ms)	Percent (%) of Field Time
10%	2.652	15.93%
20%	4.618	27.74%
30%	6.540	39.28%
40%	8.448	50.74%
50%	10.105	60.69%
60%	11.587	69.5%9
70%	13.144	78.94%
80%	15.082	90.58%
90%	16.783	100.80%
100%	20.649	124.02%

Gradient Fills

Gradient fills are computed regions of color & alpha. They are frequently used to soften elements or provide subtle details around other elements.

In general, gradients render quicker than static images derived from image files (for example, .bmp files, .jpg files, and .png files) and render slower than simple solid fills.

Table 7–2 shows the average time, in milliseconds, it takes to render a gradient (two channels, single layer, 1080i at 59.94Hz).

Table 7–2: Two Channel Gradient Fill (1080i at 59.94 Hz)

Percent (%) of Screen	Time in Milliseconds (ms)	Percent (%) of Field Time
10%	3.844	23.09%
20%	7.087	42.56%
30%	9.786	58.77%
40%	12.805	76.90%
50%	15.784	94.80%
60%	20.140	120.96%
70%	22.037	132.35%
80%	25.315	152.04%
90%	28.404	170.60%
100%	30.353	182.30%

Please note the following about working with gradient fills:

- Gradient fills are approximately 71% more expensive to render per pixel than a simple solid fill.
- Filling 60% of the screen with a gradient will require approximately an entire frame time.

Static Bitmap

A simple static image (for example, a .bmp file, a .jpeg file, or .gif file) is the most common element used in a template.

Flash Professional encodes the imported image into the template in either a lossless or a lossy format. Static images encoded in the lossless format will generate a larger template file but will render on the screen with no compression-related artifacts. Static images encoded in the lossy format will generate a smaller template file but may exhibit compression artifacts when displayed on the screen.

When you load a template with encoded images on the ChannelPort, the images must be decoded on the first reference to the image before the image can be displayed on the screen. When the image is decoded, it will be converted into a native RGB or ARGB format that can be displayed on the screen. This initial decode time can take several milliseconds.

However, once the images are decoded, future uses of the images will not take any additional time.

In general, 24-bit images render faster than 32-bit images. Thirty-two-bit images with a per-pixel alpha channel take longer to compute the resulting ARGB pixel value than a 24-bit image without per-pixel alpha channel.

Image rendering time is proportional to the final resulting pixel area of the image on screen. Smaller images will render faster than larger images. If a large image is rendered and only part of the image is visible on the screen (for example, an animation moves the image from off screen and onto the screen), the rendering time is still proportional to the total on-screen area of the image.

Table 7–3 shows the average time, in milliseconds, it takes to render a static .png image file (two channels, single layer, 1080i at 59.94Hz).

Table 7–3: Two Channel .png Image File (1080i at 59.94 Hz)

Percent (%) of Screen	Time in Milliseconds (ms)	Percent (%) of Field Time
10%	7.799	46.84%
20%	14.509	87.14%
30%	22.769	136.75%
40%	29.088	174.70%
50%	36.524	219.37%
60%	43.339	260.29%
70%	49.168	295.30%
80%	57.906	347.78%
90%	62.662	376.35%
100%	69.667	418.42%

Please note the following about working with static bitmaps:

- Filling 25% of the screen with a raster size of 1080i with a .png image file requires a frame time.
- Bitmaps take approximately two times longer to render than gradient fills.
- Bitmaps take approximately four times longer to render than solid fills.

Embedded Video

You can embed a Flash video (.flv) file when you author a template. Embedded Flash videos require a substantially longer amount of time to render than other objects (for example, solid fills, gradient fills, or static bitmaps).

Table 7–4 shows the average time, in milliseconds, it takes to render a Flash video file (two channels, single layer, 1080i at 59.94Hz).

Table 7–4: Two Channel Flash Video File (1080i at 59.94 Hz)

Percent (%) of Screen	Time in Milliseconds (ms)	Percent (%) of Field Time
1%	6.066	36.43%
2%	6.242	37.49%
3%	6.310	37.90%
4%	8.169	49.06%
5%	9.802	58.87%
6%	10.782	64.75%
7%	12.304	73.90%
8%	13.740	82.52%
9%	15.460	92.85%
10%	16.411	98.57%

Please note the following about working with Flash videos:

- Filling 10% of a screen with a raster size of 1080i with embedded video consumes approximately 89% of a frame time.
- Templates that contain Flash videos with smaller files sizes provide better quality when played on the ChannelPort.
- If you need an embedded video to play at a lower frame rate, consider spreading the frames of the embedded video throughout the timeline of your template.

Text

This section provides guidelines and considerations for using text in your authored templates.

It is outside the scope of this document to fully describe the rich text rendering capabilities of Flash Professional.

For detailed information about the TextField class, refer to:

http://help.adobe.com/en_US/FlashPlatform/reference/actionscript/3/flash/text/TextField.html.

For detailed information about the TextFormat class, refer to:

http://help.adobe.com/en_US/FlashPlatform/reference/actionscript/3/flash/text/TextFormat.html.

Please note the following guidelines when authoring templates with text to play on the ChannelPort:

- Smaller glyphs render faster than larger glyphs.
- Text fields with fewer glyphs render faster than text fields with more glyphs.
- Text field transforms (for example, rotation or scaling) do not significantly change the rendering time of the text. The transforms are proportional to the effective pixel area covered by the text.

- Changing the color of the text is the same as re-rendering all of the text on the ChannelPort.
- Filters, such as drop shadows, blurs, and glows must be re-computed by the ChannelPort when the text is rendered or updated.
- Text fields that require re-rendering will require more time to render on the ChannelPort than text fields that can be rendered, and the resulting pixels cached, by the ChannelPort.
- The time it takes to render a specific embedded font for the first time is longer than subsequent renderings of the same font.
- Larger point sizes of text require more time to render than smaller point sizes of text.
- Templates authored with high quality anti-aliasing with sub-pixel resolutions will affect performance on the ChannelPort.
- Templates authored with filters (for example, drop shadows, blurs, and glows) will affect performance on the ChannelPort.
- Templates authored with text animations will affect performance on the ChannelPort.
- Templates authored with text fields that update after they appear on the screen will affect performance on the ChannelPort.

For evaluation a string of text reading, "Introducing Harmonic ChannelPort" was rendered at different point sizes. At 96 points, the string nearly spanned 1920 pixels.

Table 7–5 shows the average time, in milliseconds, it took to render the text (two channels, single layer, 1080i at 59.94Hz).

Table 7–5: Two Channel Text Rendering (1080i at 59.94 Hz)

Point Size	Average Time in Milliseconds (ms)	Percent (%) of Field Time
12	1.943	11.65%
24	1.994	11.95%
36	2.066	12.38%
48	2.256	13.522
60	2.624	15.73%
72	3.399	20.37%
84	4.345	26.04%
96	5.172	31.02%
108	7.064	42.34%

Troubleshooting Tips

The following troubleshooting tips are provided for problems you may encounter when playing graphic templates on the ChannelPort.

Encountering Problems when Loading Graphic Templates

If you load a .swf file on the ChannelPort, and it does not play, note the following possibilities:

- The .swf file cannot be parsed when it's loaded on the ChannelPort.
- The .swf file is not a valid Harmonic template.

If the .swf file cannot be played on the ChannelPort, verify that it was created correctly and contains the proper ActionScript code.

- If you are using a Sample Harmonic Template, please try the following:
  - Be sure you save the sample Harmonic .fla file to the **Project** folder in the **Template Authoring Package** *before* publishing the .fla file as a .swf file. The **Project** folder contains ActionScript files written by Harmonic that allow your Flash Project to be played on the ChannelPort.
  - If your published .swf file (that began as a sample Harmonic .fla file) cannot be played on the ChannelPort, validate that the .swf file was created correctly, and/or republish the .swf file.
  - Refer to *Chapter 3, Using Harmonic Templates* for complete instructions on using Sample Harmonic Templates.
- If you are creating a custom template from scratch using Flash Professional, please try the following:

IMPORTANT: Custom templates that you create from scratch cannot be linked to the Harmonic ActionScript code just by saving the .fla file to the **Project** folder in the **Template Authoring Package**—additional steps are required to link custom templates to the ActionScript code.

  - If your published .swf file (that began as custom .fla file) cannot be played on the ChannelPort, validate that the ActionScript settings in Flash Professional were configured properly, and/or republish the .swf file.
  - Refer to *Chapter 4, Using Custom Templates* for complete instructions on creating custom templates with Flash Professional to play on the ChannelPort.

Encountering Problems when Playing Graphic Templates

Template Not Visible or Appears to be Cropped

If you load a template on the ChannelPort, and it is not visible or appears to be cropped during preview, note the following possibilities:

- The template is loaded on a ChannelPort layer that is not visible.
- The resolution of the template does not match the resolution of the primary video.

If your template is loaded on the ChannelPort but is not visible or appears to be cropped during preview, please try the following:

- Using FXTool, validate that the visibility of the layer is set to "Visible." If the layer is not "Visible," click the **Fade In** button. Refer to the *Spectrum ChannelPort Tools User Guide* for instructions on using FXTool.
- If the layer is faded in and "Visible," but the template is still not visible, the active template may be cropped (for example, a 1920 × 1080 template was loaded on a primary video resolution of 1280 × 720). Use Flash Professional, Media Encoder, or After Effects to validate that the resolution of the template matches the resolution of the primary video, and/or republish the template.

Template Animation Running too Fast/Slow

If you load a .swf file on the ChannelPort, and the animation appears to run too fast or too slow during preview, note the following possibilities:

- Animation is too slow: The frames per second (fps) setting of your .swf file is higher than the fps setting of the primary video.
- Animation is too fast: The fps setting of your .swf file is lower than the fps setting of the primary video.

If the animation of your .swf file appears to run too fast or too slow, please use Flash Professional to validate that the fps setting of the .swf file matches the fps setting of the primary video, and/or republish the .swf file.

NOTE: For .flv files that appear to run too slow, in Media Encoder to validate that the "Simple Profile" check box is selected from the **Video** tab in the **Export Settings** dialog box.

Template Animation Running too Slow/Stutters (fps matches)

If you load a .swf file on the ChannelPort, and the animation appears to run too slow or stutter even though the fps setting of the .swf file matches the fps setting of the primary video, please note the following:

In some cases, a .swf file will appear to be slow or stutter if the .swf file cannot accurately render a new frame of graphics on every video field. When the .swf file is running slow, the last rendered frame will be repeated until a new frame is produced, which may result in a stutter.

Refer to *Performance Considerations* for more information on creating graphic templates that perform frame accurately.

Appendix A
Contacting the Technical Assistance Center

Harmonic Global Service and Support has many Technical Assistance Centers (TAC) located Globally but virtually co-located where our customers can obtain technical assistance or request on-site visits from the Regional Field Service Management team. The TAC operates a Follow-The-Sun support model to provide Global Technical Support anytime, anywhere, through a single case management and virtual telephone system. Depending on time of day, anywhere in the world, we will receive and address your calls or emails in one of our global support centers. The Follow-the-Sun model greatly benefits our customers by provided continuous problem resolution and escalation of issues around the clock.

Table A–1: For Distribution and Delivery (Legacy Harmonic) Products

Region	Telephone Technical Support	E-mail
Americas	888.673.4896 or 408.490.6477	*support@harmonicinc.com*
EME	+44.1252.555.450	*support.emea@harmonicinc.com*
Asia Pacific – Other Territories	+852.3713.9300	*hongkongtechsupport@harmonicinc.com*
India	+44.1252.555.450	*support.emea@harmonicinc.com*
Russia	+7.495.926.4608	*rusupport@harmonicinc.com*
Africa	+44.1252.555.450	*support.emea@harmonicinc.com*
Mainland China	+86.10.8391.3313	*chinatechsupport@harmonicinc.com*

Table A–2: For Production and Playout (Legacy Omneon and Rhozet) Products

Region	Telephone Technical Support	E-mail
Americas	888.673.4896 or 408.490.6477	*omneon.support@harmonicinc.com*
EMEA	+44.1252.555.450	*omneonemeasupport@harmonicinc.com*
Asia Pacific – Other Territories	+65.6542.0050	*apacsupport@harmonicinc.com*
Japan	+81.3.5565.6737	*japansupport@harmonicinc.com*
China - Mainland	+86.10.8391.3313	*chinasupport@harmonicinc.com*
Russia and CIS	+7.495.926.4608	*rusupport@harmonicinc.com*

The Harmonic Inc. support website is:

http://www.harmonicinc.com/content/technical-support

The Harmonic Inc. Distribution and Delivery product software downloads site is:

ftp://ftp.harmonicinc.com

The Harmonic Inc. Playout and Production software downloads site is:

ftp://ftp.Omneon.com//Updates/Omneon/Current/

The Harmonic Inc. corporate address is:

Harmonic Inc.
4300 North First St.
San Jose, CA 95134, U.S.A.
Attn: Customer Support

The corporate telephone numbers for Harmonic Inc. are:

Tel. 1.800.788.1330 (from the U.S. and Canada)
Tel. +1.408.542.2500 (outside the U.S. and Canada)
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