



# Spectrum™ Onboard Playout Control and PlayoutTool

RELEASE 7.5

User Guide

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## Documentation Conventions

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



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

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**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.

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**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.

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**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.

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

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**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.

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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.
<i>Links</i>	The <i>italics in blue</i> text to indicate Cross-references, and hyperlinked cross-references in online documents.
<b>Bold</b>	Indicates a button to click, or a menu item to select.
ScreenOutput	The text that is displayed on a computer screen.
<i>Emphasis</i>	The <i>italics</i> text used for emphasis and document references.



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**NOTE:** You require Adobe Reader or Adobe Acrobat version 6.0 or later to open the PDF files. You can download Adobe Reader free of charge from [www.adobe.com](http://www.adobe.com).

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# Introduction

Welcome to the *Spectrum Onboard Payout Control User Guide*.

This document provides the following in-depth information for using the Spectrum Onboard Payout Control (OPC) feature.

- Introduction (this section) provides the following topics:
  - [Spectrum System Documentation Suite](#)
  - [Technical Support](#)
- [Chapter 1, Onboard Payout Control Configuration Overview](#) provides an overview of configuring a ChannelPort or MediaPort 7000 channel for Onboard Payout Control.
- [Chapter 2, Spectrum Onboard Payout Control](#) provides an overview of the Spectrum Onboard Payout Control feature.
- [Chapter 3, Installing PayoutTool](#) provides instructions for installing PayoutTool.
- [Chapter 4, Onboard Payout Control PayoutTool](#) provides instructions for using the OPC monitoring tool, PayoutTool.

## Spectrum System Documentation Suite

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

Spectrum (MediaDirector 2201, 2202, 2251, 2252, MediaCenter, MediaPort 5000, MediaPort 7000, ChannelPort)	
This document...	Provides this information...
Spectrum System Installation and Hardware Reference Guide	<ul style="list-style-type: none"><li>■ System installation</li><li>■ Software installation and upgrade details</li><li>■ Orientation to system components including MediaDirectors, MediaCenters, MediaPorts, ChannelPorts, and MediaStores</li><li>■ Troubleshooting system components</li><li>■ Specifications for system components</li></ul>
Spectrum System Protocol Reference Guide	<ul style="list-style-type: none"><li>■ Command sets and preroll parameters for controlling MediaDirectors</li><li>■ The Harmonic implementation of FTP server</li></ul>
Spectrum Quick Reference Guides	<ul style="list-style-type: none"><li>■ Front and back panel views of Spectrum devices</li><li>■ LED assignments and legends</li></ul>
Spectrum ChannelPort Template Authoring Guide	ChannelPort template authoring
Spectrum ChannelPort Tools User Guide	Using ChannelPort tools
Spectrum Onboard Payout Control and PayoutTool User Guide	<ul style="list-style-type: none"><li>■ Onboard Payout Control Overview</li><li>■ Using PayoutTool</li></ul>
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	<ul style="list-style-type: none"> <li>■ System installation</li> <li>■ Upgrade instructions</li> <li>■ Orientation to system components</li> </ul>
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	<ul style="list-style-type: none"> <li>■ Passwords for downloading MediaDeck and SystemManager files</li> <li>■ Instructions for obtaining and installing the license file for SystemManager</li> <li>■ Installation overview</li> </ul>
Spectrum (MediaDirector 2100, 2101, 2102, 2102B, MediaPort 1000, 3000, 4000, 6000 Series)	
This document...	Provides this information...
Omneon Spectrum System Getting Started Guide	<ul style="list-style-type: none"> <li>■ System installation</li> <li>■ Software installation and upgrade details</li> </ul>
Omneon Spectrum System Hardware Orientation Guide	<ul style="list-style-type: none"> <li>■ Orientation to system components including MediaPorts, and MediaStores</li> <li>■ Troubleshooting system components</li> <li>■ Specifications for system components</li> </ul>
Omneon Spectrum System Protocol Reference Guide	<ul style="list-style-type: none"> <li>■ Command sets and preroll parameters for controlling MediaDirectors</li> <li>■ The Harmonic implementation of FTP server</li> </ul>
Omneon Spectrum Quick Reference Guides	<ul style="list-style-type: none"> <li>■ Front and back panel views of Spectrum devices</li> <li>■ LED assignments and legends</li> </ul>
Omneon MediaDeck	
This document...	Provides this information...
Omneon MediaDeck User Guide	<ul style="list-style-type: none"> <li>■ System installation</li> <li>■ Upgrade instructions</li> <li>■ Orientation to system components</li> </ul>
Omneon MediaDeck Installation Guide	System installation
Spectrum and MediaDeck Release Notes	Last minute information regarding a product release
Omneon MediaDeck Read Me First	<ul style="list-style-type: none"> <li>■ Passwords for downloading MediaDeck and SystemManager files</li> <li>■ Instructions for obtaining and installing the license file for SystemManager</li> <li>■ Installation overview</li> </ul>

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



- **Release Notes:** Spectrum\_v.x.x.x\_ReleaseNotes.pdf
- **All other components of the Spectrum System Documentation Suite:** MediaDeckAndSpectrum-v.x.x.x-Documentation.exe
- **For ChannelPort templates, tools, and documentation, as well as Onboard Payout Control tools and documentation:** ChannelPortTemplatesAndTools-v.x.x.x-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-v.x.x.x-Documentation.exe.

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

All files on the Support Server are password protected. Contact [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 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**

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 Harmonic 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 Harmonic 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

## Onboard Playout Control Configuration Overview

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### ChannelPort and MediaPort Installation Overview

ChannelPort and MediaPort 7000 modules can be installed in a MediaDeck 7000 or a MediaPort 7000.

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

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

### Onboard Playout Control Configuration Overview

Spectrum Onboard Playout Control (OPC), including PlayoutTool, works in coordination with a Playout Channel running on a Spectrum video server that you configure using SystemManager.

The following sections provide an overview for configuring a ChannelPort or a MediaPort 7000 for Onboard Playout Control:

- [ChannelPort System Configuration Overview](#)
- [MediaPort 7000 Configuration Overview](#)

### ChannelPort System Configuration Overview

Harmonic recommends that you configure your ChannelPort system in the following order:

1. **System:** If you wish to enable Enhanced Channel mode on your ChannelPort, do so before configuring your channels. Otherwise, the ChannelPort will operate in Standard Channel mode. See “Enabling Enhanced Channel Mode” in the *Harmonic SystemManager User Guide*.
2. **Channel:** Configure the basic parameters for your ChannelPort channel, including master control switcher settings, audio profiles, independent branding, or serial port settings required for automation. See “Configuring a ChannelPort Channel” and “Configuring an Audio Profile” in the *Harmonic SystemManager User Guide* for more information.
3. **Player:** See “Player Configuration” in the *Harmonic SystemManager User Guide* for help with configuring a player. Note that if you wish to use Onboard Playout Control (OPC) for player control, configure your player to use “Harmonic Playout” for control.
4. **Graphics:** Make sure your graphic templates follow Harmonic guidelines so they can be played on the ChannelPort. Configure FXTool if you plan to use it. See the *Spectrum ChannelPort Template Authoring Guide*.
5. **Onboard Playout Control (OPC):** Configure any OPC features and tools that you wish to use. For help with configuring the Playout Channel, Traffic and Billing, or Media Fetch, see “Video Server Services Configuration” in the *Harmonic SystemManager User Guide*. For information on creating playlists and installing PlayoutTool, see the *Spectrum Onboard Playout Control and PlayoutTool User Guide*. For information on configuring PreviewTool, refer to the *Spectrum ChannelPort Tools User Guide*.

6. **GPIO:** If using GPIO, configure the ChannelPort GPIO triggers and then map them to ChannelPort channel events or Playout Channel events . See “Configuring ChannelPort GPIO Triggers” in the *Harmonic SystemManager User Guide*.
7. **EAS:** If using an EAS, make sure the ChannelPort is connected to the EAS as described in the installation instructions, and then configure the EAS settings. See “Configuring a ChannelPort Channel” in the *Harmonic SystemManager User Guide*.

## MediaPort 7000 Configuration Overview

Harmonic recommends that you configure your MediaPort 7000 in the following order:

1. **Player:** Configure your players according to the instructions in “Player Configuration” in the *Harmonic SystemManager User Guide*. Note that if you wish to use Onboard Playout Control (OPC) for player control, configure your player to use “Harmonic Playout” for control.
2. **Onboard Playout Control (OPC):** Configure any OPC features and tools that you wish to use. For information on configuring the Playout Channel, Traffic and Billing, and Media Fetch, see “Video Server Services Configuration” in the *Harmonic SystemManager User Guide*. For information about creating playlists and installing and using the PlayoutTool, refer to the *Spectrum Onboard Playout Control and PlayoutTool User Guide*.
3. **GPIO:** Configure GPIO settings on the MediaPort 7000 and map those GPIO triggers to any player settings or OPC settings you wish to configure. See “Configuring GPIO” in the *Harmonic SystemManager User Guide*.

# Chapter 2

## Spectrum Onboard Playout Control

---

Onboard Playout Control (OPC) is an optional, licensed Spectrum system feature that provides unattended playout of clips and graphics driven by a 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 channel for which it has been configured.

OPC consists of software present on a Spectrum system (MediaCenter, MediaDirector, or MediaDeck 7000) plus a tool for monitoring channels, called PlayoutTool (refer to [Chapter 4, Onboard Playout Control PlayoutTool](#) for more information).

Media Fetch, also an optional, licensed feature is available for use with OPC. Refer to [About Media Fetch](#) for more information.

This chapter includes the following sections:

- [OPC Workflow Overview](#)
- [About Traffic and Billing Services](#)
- [About Spectrum OPC Playlists](#)
- [Retrieving a Spectrum As-run List](#)
- [Configuring Error Thresholds](#)
- [About Media Fetch](#)
- [Additional OPC Terms and Concepts](#)

### OPC Workflow Overview

The following steps provide an overview for getting started with Onboard Playout Control:

1. Configure the ChannelPort channel for Onboard Playout Control.
  - If you are using a ChannelPort, refer to [ChannelPort System Configuration Overview](#) in [Chapter 1, Onboard Playout Control Configuration Overview](#) for instructions.
  - If you are using a MediaPort 7000, refer to [MediaPort 7000 Configuration Overview](#) in [Chapter 1, Onboard Playout Control Configuration Overview](#) for instructions.



---

**NOTE:** The playout channel of a MediaPort 7000 can be configured for OPC, but a MediaPort 7000 cannot play graphic secondaries.

---

2. Your traffic and billing department creates a playlist that must adhere to the Spectrum OPC playlist schema. Refer to [About Spectrum OPC Playlists](#) for more information.
3. Copy the playlist to the Playlist folder on the Spectrum video server. Refer to [About Spectrum OPC Playlists](#) for more information.
4. Once all the events in the playlist have been executed, you can retrieve your as-run list from the as-run folder on the Spectrum video server. Refer to [Retrieving a Spectrum As-run List](#) for more information.

## About Traffic and Billing Services

When you enable traffic and billing services in SystemManager, you enable the use of the playlist and as-run folders, which is an integral part of the OPC feature. After enabling traffic and billing, you can override the default locations of playlist and as-run folders.

Refer to [About Spectrum OPC Playlists](#) for more information about playlists and the playlist folder. Refer to [Retrieving a Spectrum As-run List](#) for more information about as-run lists and the as-run folder.

Refer to “Enabling Traffic and Billing Services” in the *SystemManager User Guide* for instructions on enabling/disabling traffic and billing services.

## About Spectrum OPC Playlists

The Spectrum OPC playlist is an XML file that contains information about primary and secondary events that are scheduled to be played at a certain time. This information is set by your traffic services department.

The ChannelPortTemplatesAndTools-v7.5.0.0-SWandDoc package contains a sample OPC playlist as well as an XML schema document (.xsd) for creating an OPC playlist. The OPC .xsd file contains the rules for ensuring your playlist will be a “valid” .xml file.




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**IMPORTANT:** Playlist must conform to the Spectrum OPC Playlist schema.

---

For an example of an OPC playlist, refer to `playoutengine_playlist_example.xml`.

For the OPC playlist schema, refer to `playoutengine_playlist.xsd`.

## Loading a Spectrum OPC Playlist

Harmonic has provided a default location on your Spectrum video server for loading your playlists. The default location is shown in the following path:

```
\\<IP address>\<file system>\traffic\<serial number>\playlists
```

- IP address: The IP address of your Spectrum video server (MediaDirector, MediaCenter, or MediaDeck 7000).




---

**TIP:** You can find the IP address of the Spectrum video server by navigating to the Properties page for that device in SystemManager. For details, refer to “Viewing Spectrum Video Server Properties” in the *SystemManager User Guide*.

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- The <file system> default name is `fs0`.
- Serial number: The serial number of your Spectrum video server (MediaDirector, MediaCenter, or MediaDeck 7000).




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**TIP:** You can find the serial number of the Spectrum video server by navigating to the Properties page for that device in SystemManager and scrolling to the Serial Number field. For details, refer to “Viewing Spectrum Video Server Properties” in the *SystemManager User Guide*.

---

### To load a playlist via the filesystem:

1. Click **Start**, and in the search field type in the IP address of your MediaDirector, MediaCenter, or MediaDeck 7000.
2. Open the **file system** folder.
3. Open the **traffic** folder.

4. Open the folder with the serial number of your MediaDirector, MediaCenter, or MediaDeck 7000.
5. Open the **playlists** folder.
6. Copy your playlist to this location.
7. To monitor the playlist when it runs, use PlayoutTool. Refer to [Chapter 4, Onboard Playout Control PlayoutTool](#) for instructions.

If you want to configure and use a playlist folder that is not the default folder, see “Configuring a Playout Channel” and “Enabling Traffic and Billing” in the *SystemManager User Guide*.

## About Time Delays when Loading Playlists

### Delay when Playlists Loaded from Folder to OPC

The Spectrum traffic system regularly polls the **playlists** folder and loads newly discovered Spectrum OPC playlists onto the OPC. After you copy a playlist to the **playlists** folder, it may take at least ten seconds for the playlist to be loaded from the **playlists** folder onto the OPC, at which point it can be monitored in PlayoutTool.

### Delay when New Playlist Replaces Playlist On Air

If you load a playlist that is meant to replace a playlist that is currently live, it may take up to 30 seconds after the end of the current primary event before events from the new playlist replace events from the running playlist.



---

**NOTE:** The thirty-second delay is in addition to the ten-second delay that may occur when the playlist is loaded from the **playlist** folder to the OPC.

---

The OPC identifies a point in the future where events from the new playlist can replace events from the running playlist without any on-air disruption. The first event to be replaced will be after that next event (the event after the current on-air event), and at least 30 seconds from, the current on-air event.

For example, if the current primary event is set to play for an hour, events from the new playlist will not start until that primary event and the event following it are complete. However, if the current primary event is about to end, and is followed by several short primary events, the first event to be replaced will be the one that after the next event and has a start time that is at least 30 seconds in the future from the end of the current primary event.

## Retrieving a Spectrum As-run List

An as-run list is a log, created by OPC, of executed primary and secondary events. They contain the same data as your playlists, but they also include the actual times and durations of played events. In addition, any failures or errors that occurred during playout are noted in as-run lists.

Harmonic has provided a default location on your Spectrum video server where as-run lists are stored after OPC creates them. The default location is shown in the following path:

```
\\<IP address>\<file system>\traffic\<serial number>\asruns
```

- IP address: The IP address of your Spectrum video server (MediaDirector, MediaCenter, or MediaDeck 7000).



**TIP:** You can find the IP address of the Spectrum video server by navigating to the Properties page for that device in SystemManager. For details, refer to “Viewing Spectrum Video Server Properties” in the *SystemManager User Guide*.

- The <file system> default name is **fs0**.
- Serial number: The serial number of your Spectrum video server (MediaDirector, MediaCenter, or MediaDeck 7000).



**TIP:** You can find the serial number of the Spectrum video server by navigating to the Properties page for that device in SystemManager. For details, refer to “Viewing Spectrum Video Server Properties” in the *SystemManager User Guide*.

#### To retrieve an as-run list via the filesystem:

1. Click **Start**, and in the search field type in the IP address of your MediaDirector, MediaCenter, or MediaDeck 7000.
2. Open the **file system** folder.
3. Open the **traffic** folder.
4. Open the folder with the serial number of your MediaDirector, MediaCenter, or MediaDeck 7000.
5. Open the **asruns** folder.



**NOTE:** Once they are created, as-run lists are kept in this location for 45 days. After 45 days, they will be deleted from the Spectrum system.

If you want to configure and use an as-run folder that is not the default folder, see “Configuring a Playout Channel” and “Enabling Traffic and Billing” in the *SystemManager User Guide*.

## Configuring Error Thresholds

To prevent the Spectrum system from creating playlist alarms before a playlist is finalized, you can configure the error thresholds.

For example, you may load a playlist to the playlist folder on the Spectrum video server before all the media clips are prepared. If this playlist is sent to OPC before the media clips are ready, you will see errors in the Spectrum Syslog or in the PlayoutTool Channel Status area or Event List area.

The following error thresholds can be configured in SystemManager:

- **Playlist Warning Threshold (hh:mm:ss):** If there is a problem in the playlist (for example, missing material or a schedule gap), this is the amount of time before the Event Start when the Spectrum system will generate a warning.
- **Playlist Error Threshold (hh:mm:ss):** If there is a problem in the playlist (for example, missing material or a schedule gap), this is the amount of time before the Event Start when the Spectrum system will generate an error.
- **Schedule Gap Error Threshold (seconds):** If there is a schedule gap in the playlist that is greater than the threshold, the Spectrum system will generate an error.
- **Schedule Overlap Error Threshold (seconds):** If there is a schedule overlap in the playlist that is greater than the threshold, the Spectrum system will generate an error.



- **Generate Error on Empty Playlist:** If there are not enough events in the playlist to extend past the time indicated in the Playlist Error Threshold field, the Spectrum system will generate an error.

For more instructions on configuring error thresholds, refer to “Configuring a Playout Channel” in the *SystemManager User Guide*.

For more information on viewing alarms in PlayoutTool, refer to [Chapter 4, Onboard Playout Control PlayoutTool](#).

## About Media Fetch

Media Fetch is an optional, licensed feature that extends the functionality of OPC. After it is configured, Media Fetch uses File Transfer Protocol (FTP) to automatically retrieve material that is scheduled to be played. Up to four remote data stores can be configured for Media Fetch.

Each Playout Channel instance needs to be configured for Media Fetch.

As an extension of OPC, Media Fetch sequences transfers so that material needed earliest is transferred ahead of material needed later.

Spectrum systems support Media Fetch only when it is used in conjunction with OPC. It is not possible to use Media Fetch with any other playout control or automation system.

For instructions on configuring Media Fetch, refer to “Configuring the Media Fetch Service” in the *SystemManager User Guide*.

## Additional OPC Terms and Concepts

The following terms and concepts summarize the rules that govern the execution of an OPC playlist.

### Primary Events

There are several types of primary events:

- **Primary (video) event:** The primary video material is a clip from a Spectrum player, an external input feed, or the internal color generator.
- **Comment event:** These events provide additional information but do not contribute to the video output.
  - **Break Header event:** This is a specialized type of comment event that does not contribute to the video output.
  - **Program Header event:** A specialized type of comment event that does not contribute to the video output.
- **Schedule Header event:** These events are automatically inserted at the start of each schedule, and are used to mark the boundaries between schedules. Like comment events, they do not contribute to the video output.
- **Status event:** This type of event is added to the as-run file by OPC to record important information about the executed playlist.

### Primary Event Start Mode

Primary events are executed, or “taken to-air”, based on their Start Mode and the state of the current on-air primary event. There are several types of Primary Event Start Modes:

- *Fixed Start Mode*
- *Follow Start Mode*
- *Manual Start Mode*
- *External Start Mode*

### Fixed Start Mode

A Fixed start mode event is taken to air at its scheduled start date/time. If the current on-air event has not completed when the Fixed start event is due, the current on-air event will be preempted (and truncated). If there are events before the Fixed start event that have not yet gone to air, they will be skipped. Note that event date/times are in UTC in an OPC playlist file, but are displayed/edited in the local channel timezone in PlayoutTool.

If a Fixed start mode event is not yet due when the current event ends, the Black Gap Filler event will be taken.

OPC looks ahead at the next five events in the playlist. The Fixed start event must be within this five-event look ahead in order to be taken. Comments, headers, status events, and dropped events are not included in the five-event limit.

OPC acts on the next Fixed start event in the playlist, ignoring subsequent Fixed start events until the first has gone on-air. This could result in a situation where a subsequent Fixed start event becomes overdue (its scheduled time has passed) before it becomes the next Fixed start event.

An overdue Fixed start event is treated as a Follow start event for switching purposes.

A Fixed start event can be taken to air early by a Take Next command from the operator.

### Follow Start Mode

A Follow Start Mode event is taken to air when the current on-air event ends.

If there is no on-air event, or the on-air event has a Manual or External End mode, the next Follow event will not be automatically taken to air. A Take Next command will be required to advance the playlist.

A Follow Start Mode event can be taken to air early by a Take Next command from the operator.

### Manual Start Mode

A Manual Start Mode event will not be automatically taken to air when the current on-air event ends. When the current on-air event ends, the output will be switched to the default MCS source (if configured) and playlist execution will stop until a Take Next command is issued by the operator.

An upcoming Fixed start event can cause a Manual start event to be skipped before it is taken.

### External Start Mode

Like a Manual Start Mode event, an External Start Mode event will not automatically be taken to air when the current on-air event ends. The output will be switched to the default MCS source (if configured) and playlist execution will stop until an External Cue is received.



---

**NOTE:** External cues are driven by your Event Manager (GPI) Input configuration. Refer to "Configuring a Playout Channel" in the *Harmonic SystemManager User Guide* for instructions on configuring Event Manager Input.

---

An External Cue will not start an event unless the event has External Start Mode.

An upcoming Fixed start event can cause an External start event to be skipped before it is taken.

An External Start Mode event can also be started by a Take Next command from the operator.

## Primary Event End Mode

The end of a primary event is determined by the End Mode field. There are three Primary Event End Modes:

- [Duration End Mode](#)
- [Manual End Mode](#)
- [External End Mode](#)

### Duration End Mode

A primary event with Duration End Mode will end when the scheduled duration for the event expires. If the next event is a Follow start event, it will be taken immediately. If the next event is a Manual or External start event, the output will be switched to the default MCS source (if configured) until a manual trigger is received from the operator. If the next event is a Fixed start event that has not yet come due, the Black Gap Filler event will be taken.

### Manual End Mode

A primary event with Manual End Mode will remain on-air until a Take Next command is received from the operator, or it is preempted by an upcoming Fixed start event.

### External End Mode

A primary event with External End Mode will remain on-air until an External Cue is received, a Take Next command is issued by the operator, or it is preempted by an upcoming Fixed start event.

An External Cue will not end an event unless the event has External End Mode.



---

**NOTE:** External cues are driven by your Event Manager (GPI) Input configuration. Refer to "Configuring a Playout Channel" in the *Harmonic SystemManager User Guide* for instructions on configuring Event Manager Input.

---

## Other Primary Event Fields

The following primary event fields are also used to control the channel output:

- **Expected Start Time (scheduled start time):** determines when Fixed start events are taken.
- **Source:** determines the MCS input to be switched to air (Player, External Input, Color Generator).
- **Material:** determines the video clip to be played when the source is Player, or the color to be displayed when the source is Color Generator.
- **SOM:** determines the starting point for playback of video clips (mark in, offset from the start of the clip, or absolute timecode).
- **Transition:** determines the fade or mix transition to be used between primary events.

- **Duration:** determines the length of time that a primary event stays on-air when the event has Duration End Mode; also used as an approximation of how the event stays on-air for other End Modes.

## Secondary Events

Secondary events are always associated with a primary event, and they are always executed with timing that is relative to their primary event. There are two types of secondary events:

- **Graphics event:** These events cause graphics templates to be loaded, faded up, faded down, and unloaded.
- **Comment event:** These events provide additional information but do not contribute to the video output.

## Secondary Event Start Mode

The timing of the start of a secondary event is determined by an offset from the start or end of the primary event to which it is attached. There are two Secondary Event Start Modes:

- *Offset From Start Mode*
- *Offset From End Mode*

### Offset From Start Mode

The secondary event will go to air at a time offset relative to the start of its primary event. The amount of the offset is specified in the Start Offset field. Negative values are used to specify that the secondary event is scheduled to start before the start of the primary event, and positive values are used to specify that the secondary event is scheduled to start after the start of the primary event.

Secondary events can only extend into (overlap) a single preceding and/or following primary event.

Negative start offsets can only be honored if the start time of the primary event is predictable (for example, if it is a Fixed start event, or it is a Follow event and there is an event with a Duration end type on-air).

### Offset From End Mode

The secondary event will go to air at a time offset relative to the end of its primary event. The amount of the offset is specified in the Start Offset field. Negative values are used to specify that the secondary event is scheduled to start before the end of the primary event, and positive values used to specify that the secondary event is scheduled to start after the end of the primary event.

Secondary events can only extend into (overlap) a single preceding and/or following primary event.

## Secondary Event End Mode

There are three Secondary Event End Modes:

- *Duration End Mode*
- *Offset From Start End Mode*
- *Offset From End Mode*

## Duration End Mode

The secondary event will end after the time specified in the Duration field has passed.

Secondary events can only extend into (overlap) a single preceding and/or following primary event.

## Offset From Start End Mode

The secondary event will end at a time offset relative to the start of its primary event. The amount of the offset is specified in the End Offset field. Negative values are used to specify that the secondary event is scheduled to end before the start of the primary event, and positive values are used to specify that the secondary event is scheduled to end after the start of the primary event.

A secondary event cannot “end before it starts”. Invalid combinations of Start Mode/Start Offset, Duration, and End Mode/End Offset will be flagged as an error.

## Offset From End Mode

The secondary event will end at a time offset relative to the end of its primary event. The amount of the offset is specified in the End Offset field. Negative values are used to specify that the secondary event is scheduled to end before the end of the primary event, and positive values used to specify that the secondary event is scheduled to end after the end of the primary event.

A secondary event cannot “end before it starts.” Invalid combinations of Start Mode/Start Offset, Duration, and End Mode/End Offset will be flagged as errors.

## Other Secondary Event Fields

The following secondary event fields are also used to control the channel output:

- **Material:** determines the graphics template to be loaded, faded up, faded down, or unloaded.
- **Fade In Rate:** determines the graphics fade in rate—cut, slow, medium, or fast.
- **Fade Out Rate:** determines the graphics fade out rate—cut, slow, medium, or fast.
- **Text Updates:** used to populate text boxes in graphics templates, with optional time offset from the start of the secondary event.
- **Stop Animation Lead Time:** used to trigger a stop animation at a specified time before the end of the secondary event.

## OPC Interactive Controls

For complete overview of the OPC PlayoutTool and its interactive controls, refer to [Chapter 4, Onboard Playout Control PlayoutTool](#)

# Chapter 3

## Installing PlayoutTool

---

This chapter includes installation instructions for PlayoutTool, a monitoring tool for the Spectrum Onboard Playout Control (OPC) feature.

This chapter includes the following sections:

- [System Requirements](#)
- [Installing PlayoutTool](#)

### System Requirements

Before installing PlayoutTool, your computer must conform to the following minimum requirements:

#### Windows

- 2.33GHz or faster x86-compatible processor or Intel® Atom™ 1.6GHz or faster processor for netbooks
- Windows XP Home, Professional, or Tablet PC Edition with Service Pack 3; Windows Server 2003; Windows Server 2008; Windows Vista Home Premium, Business, Ultimate, or Enterprise (including 64-bit editions) with Service Pack 2; or Windows 7
- 512MB of RAM (1GB recommended)

#### Macintosh Operating System

- Intel Core™ Duo or faster processor
- Macintosh OS X v10.6, v10.7, or v10.8
- 512MB of RAM (1GB recommended)

### System Compatibility

PlayoutTool 7.5 is compatible Spectrum version 7.5 and greater.

### Installing PlayoutTool

The following installation instructions are for Windows operating systems. The installation process for Macintosh OS X may vary slightly.

#### Installing Adobe Air

Adobe® Air® is required to install and run PlayoutTool. If you do not already have Adobe Air installed, you can download the latest version for free at <http://get.adobe.com/air/>.

#### Installing PlayoutTool

To install PlayoutTool:

1. Open the Flexapps folder located in the ChannelPortTemplatesAndTools-v7.5.0.0-SWandDoc.exe.

2. Locate the PlayoutTool installer icon, as shown in [Figure 3-1](#).



Figure 3-1: PlayoutTool Installer Icon

3. Double-click the PlayoutTool installer icon to open the PlayoutTool installation dialog, as shown in [Figure 3-2](#).

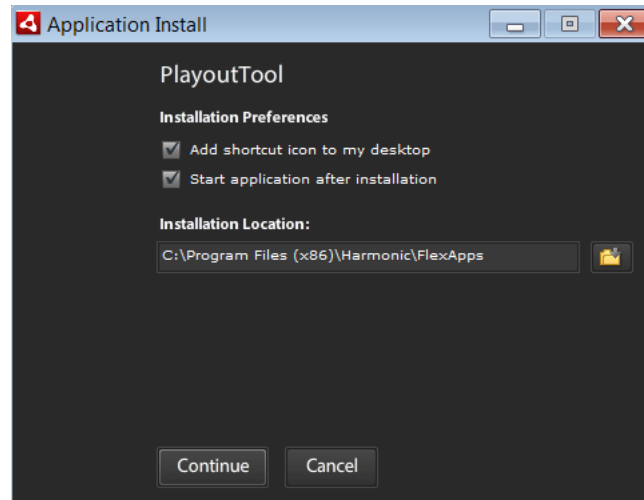


Figure 3-2: PlayoutTool Installation Dialog

4. Choose an installation location, and click **Continue** to complete the installation of PlayoutTool.

Refer to [Chapter 4, Onboard Playout Control PlayoutTool](#) to begin using PlayoutTool.

# Chapter 4

## Onboard Playout Control PlayoutTool

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PlayoutTool is a tool for controlling Playout Channels that have been licensed for Spectrum Onboard Playout Control (OPC), which allows for automatic execution of a playlist derived from a traffic schedule. For a complete overview of OPC, including instructions on loading playlists, refer to “Chapter 2, Spectrum Onboard Playout Control.”

For instructions on configuring the Spectrum Playout Channel, refer to “Configuring a Playout Channel” in the *SystemManager User Guide*.

Choose from the following topics:

- [Configuring the PlayoutTool Connection and Channel Group\(s\)](#)
- [Using PlayoutTool](#)
- [Using Channel Override](#)
- [Using Mixer Override](#)
- [Using ARC Override](#)
- [Editing Events in PlayoutTool](#)
- [PlayoutTool Keyboard Shortcuts](#)

### Configuring the PlayoutTool Connection and Channel Group(s)

The first time you run PlayoutTool, you will encounter a series of configuration windows in which you will need to configure your connection and set up your Channel Group(s).

A Channel Group consists of any channels on your MediaDirector(s) that you have a logical reason for grouping together.

**To configure the connection and Channel Group(s):**

1. Start PlayoutTool.
2. In the **Home Window**, click **New Group**.



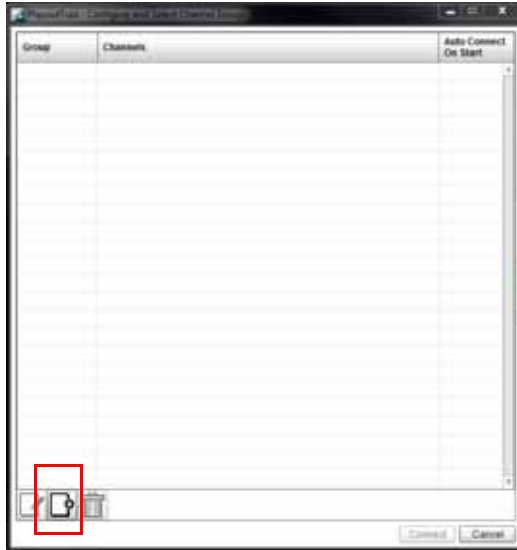


Figure 4–1: PlayoutTool Home Window



**NOTE:** If you are installing PlayoutTool for the first time, you will be prompted to configure Channel Groups. Click **Yes** to continue.

After clicking **New Group**, the **Configure Channel Group** dialog box opens.

3. In the **Group Name** field, type in a unique name for your Channel Group.
4. Click **New Channels**.

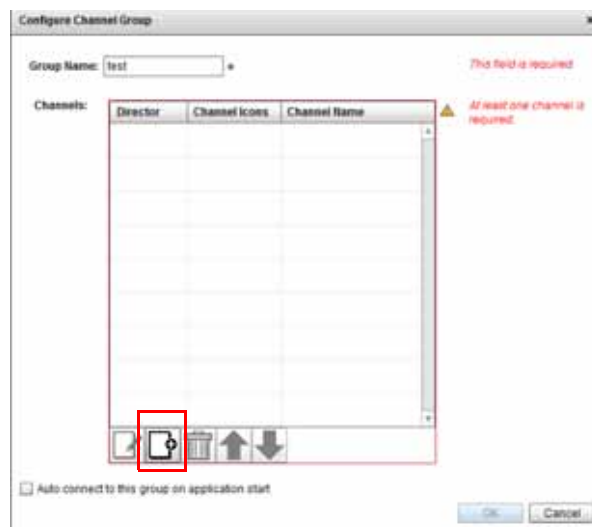


Figure 4–2: Configure Channel Group Dialog Box

After clicking **New Channels**, the **Include Channels in Group** dialog box opens.

5. In the **Director** field, type in the host IP address of the connected Spectrum video server. This may be the MediaDeck 7000 in which the ChannelPort or MediaPort is installed, or, if the ChannelPort or MediaPort is installed in a MediaPort 7000, the host IP address of the connected MediaDirector or MediaCenter.



**TIP:** You can find the host IP address for the Spectrum video server by navigating to the **Properties** page for that device in SystemManager. For details, refer to “Viewing Spectrum Video Server Properties” in the *SystemManager User Guide*.

When PlayoutTool has confirmed the host, the button next to the **Host** box will turn green and a list of available channels will be displayed.

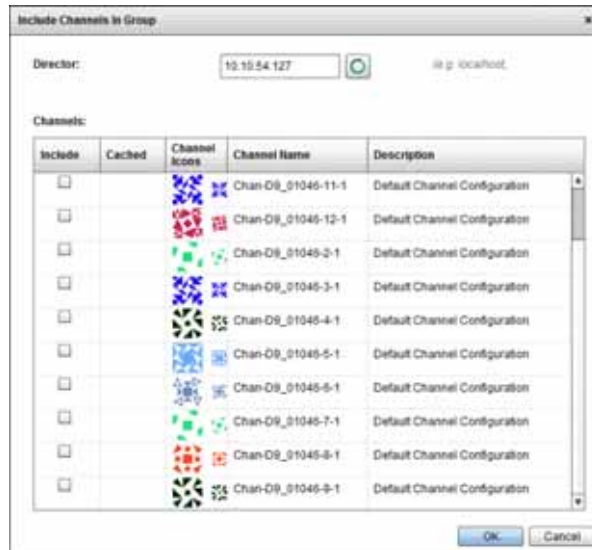


Figure 4–3: Include Channels in Group Dialog Box

- From the **Include** column, select the check box for each channel you want to add to your new Channel Group.



**NOTE:** When adding a channel to a channel group, make sure the channel is in the same frame rate family (for example, 29.97/59.94, or 25/50) as the other channels in the group. This is so that the channels can share a timescale on the multi-channel horizontal timeline display.

- Click **OK**.



**TIP:** The Channel Icons that appear in PlayoutTool are default images. You can add channel-specific icons when you configure your Spectrum Playout Channel settings in SystemManager.

After you include channels in your new Channel Group, you will return to the **Configure Channel Group** dialog box. From this dialog box, you can choose to edit channels, add new channels from the same or a different MediaDirector, or delete channels.

To connect to this new Channel Group when you launch PlayoutTool, select **Auto connect to this group on application start**.

- When you are finished configuring the channel group, click **OK**.

You will return to the **Home Window**. Your new Channel Group(s) and assigned channels will be listed. From this window, you can choose to edit a Channel Group, create a Channel Group, or delete a Channel Group.

- To connect to a Channel Group, select a group and click **Connect**.

## Using PlayoutTool

The following topics provide an overview of the PlayoutTool user interface. Choose from the following:

- [Channel Group View](#)
- [Channel List View](#)
- [Viewing Channel Selectors](#)
- [Viewing the Channel Status Area](#)
- [Viewing On-Air Primaries and Secondaries](#)
- [Viewing the Event List](#)
- [Viewing Event Details](#)
- [Viewing Channel Alarms](#)
- [Viewing Diagnostic Logs](#)



**TIP:** You can show/hide views by clicking **Views** from the menu bar.

### Channel Group View

After you connect to a Channel Group, the Channel Group view will open, as shown in the following figure.



Figure 4–4: Channel Group View

The Channel Group view shows Summary Status icons for each channel. The Summary Status icons reveal information about primary/secondary material status, connection states, alarm states and severity, as well information about timing, data, and playlist errors.

To open a particular channel (the Channel List View), click on one of the channel tabs at the top of the window.

### Channel List View

The following figure shows the Channel List view.

To open the Channel List view, click on any channel tab after connecting to your channel group. If you have already loaded a playlist (refer to Chapter 2, "Spectrum Onboard Playout Control"), you will see the playlist executing when you open this view. If you have not yet loaded a playlist, refer to [Loading a Playlist](#) for instructions.

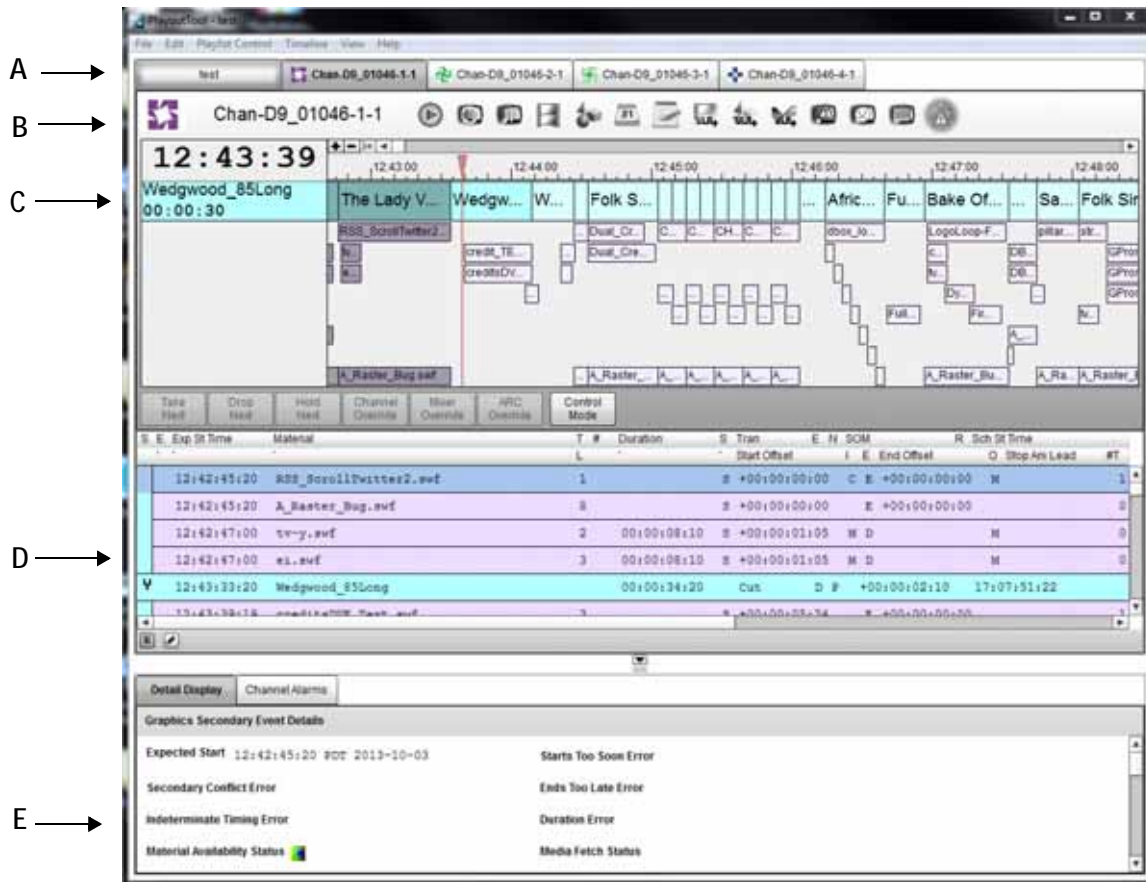


Figure 4–5: Channel List View

The following table explains the areas of the Channel List view.

Table 4–1: Channel List View Areas





Area	UI Name
A	Channel Selectors Refer to <a href="#">Viewing Channel Selectors</a> for more information.
B	Channel Status Area Refer to <a href="#">Viewing the Channel Status Area</a> for more information
C	On-air Primaries and Secondaries Refer to <a href="#">Viewing On-Air Primaries and Secondaries</a> for more information

Table 4–1: Channel List View Areas

Area	UI Name
D	Event List Area Refer to <a href="#">Viewing the Event List</a> for more information
E	This area has two functions: <ul style="list-style-type: none"> <li>■ Primary Event Details/Graphics Secondary Details. Refer to <a href="#">Viewing Event Details</a> for more information</li> <li>■ Channel Alarms view. Refer to <a href="#">Viewing Channel Alarms</a> for more information</li> </ul>

## Viewing Channel Selectors

Each Channel selector shows the following:

- The name of the channel as reported by discovery calls to the Spectrum video server.
- The summary status of the channel. Channel summary status is represented by the following colors:
  - Grey : Channel status is "Normal."
  - Yellow : Channel status is "Info."
  - Amber : Channel status is "Warning."
  - Red : Channel status is "Alarm," or the TCP link to the ChannelPort or MediaPort is disconnected.

To view a channel, click the tab for that channel.

## Viewing the Channel Status Area

The following figure shows the status icons of the Channel Status area.

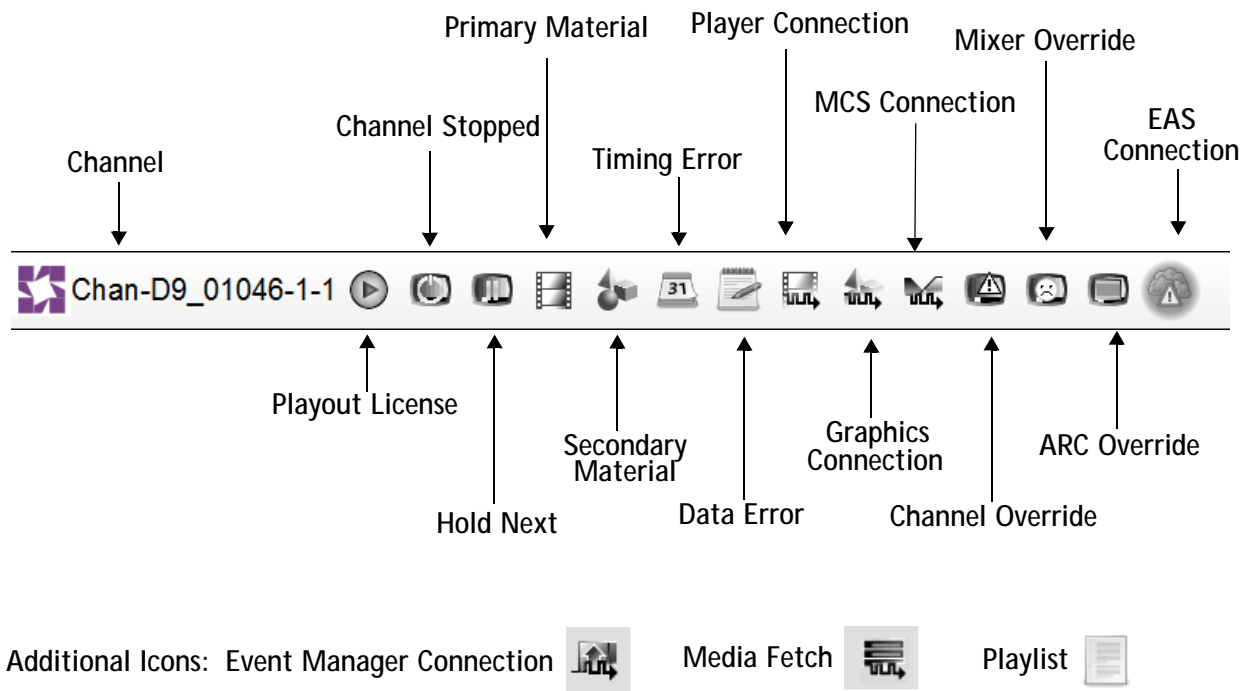


Figure 4-6: Channel Status Area Icons

When viewing channel status icons, please remember the following:

- A tooltip contains the status of each icon.
- When a channel has an error, the area behind the relevant icon will change color to match the severity of the error. The colors correspond to the error colors listed in [Viewing Channel Selectors](#).

The available icon status for each feature is as follows:

- **License, Error, and Material statuses**

The following apply to Playout License, Primary Material, Secondary Material, Timing Errors, Data Errors, and Playlist Errors.

- **Good:** The channel is licensed for operation, no error exists, or no material is missing.
- **Missing:** Material is missing somewhere in the loaded schedule.
- **Warning:** Missing material is scheduled within the warning region or an error is scheduled within the warning region.
- **Alarm:** The channel is not licensed for operation, missing material is scheduled within the alarm region, or an error is scheduled in the alarm region.
- **Unknown:** The status of the license has not been determined, the status of missing material has not been determined, or the status of an error cannot be determined. (You may see this status for a short time after a channel has been restarted.)

- **Connection statuses**

The following apply to connection statuses for Player, Graphics, MCS, Media Fetch, and Event Manager.

- **Idle (icon not shown):** The channel is not configured, or a feature is not configured for this channel.

- ❑ **Good:** The connection with the feature is normal.
- ❑ **Alarm:** The connection with the feature is not normal.
- ❑ **Unknown:** The connection status of the feature has not been determined. (You may see this status for a short time after a channel has been restarted.)
- **Channel Activity statuses**

The following apply to activity statuses for Channel Override, Mixer Override, and EAS

  - ❑ **Idle** (icon not shown): The channel is not configured.
  - ❑ **Off:** The feature is not active.
  - ❑ **On:** The feature is active.
  - ❑ **Unknown:** The status of the feature is unknown. (You may see this status for a short time after a channel has been restarted.)

For information on configuring the ChannelPort Master Control Switch (MCS), refer to “Configuring a ChannelPort Channel” in the *SystemManager User Guide*.

For information on configuring Media Fetch, refer to “Configuring the Media Fetch Service” in the *SystemManager User Guide*.

For information on configuring players, refer to “Player Configuration” in the *SystemManager User Guide*.

For information configuring an EAS, refer to “Configuring a ChannelPort Channel” in the *SystemManager User Guide*.

## Viewing On-Air Primaries and Secondaries

The On-Air Primary and Secondaries area shows a timeline view, which runs in realtime, of the primary video layer and the eight secondary video layers.

When a video is loaded and faded up on the primary event layer, the file name and a countdown are displayed in the left-hand On-Air events column.



**NOTE:** If your video server is configured with a MediaPort 7000, you can only monitor primary events. The Playout Channel will ignore any secondary events scheduled for playout on a MediaPort 7000.

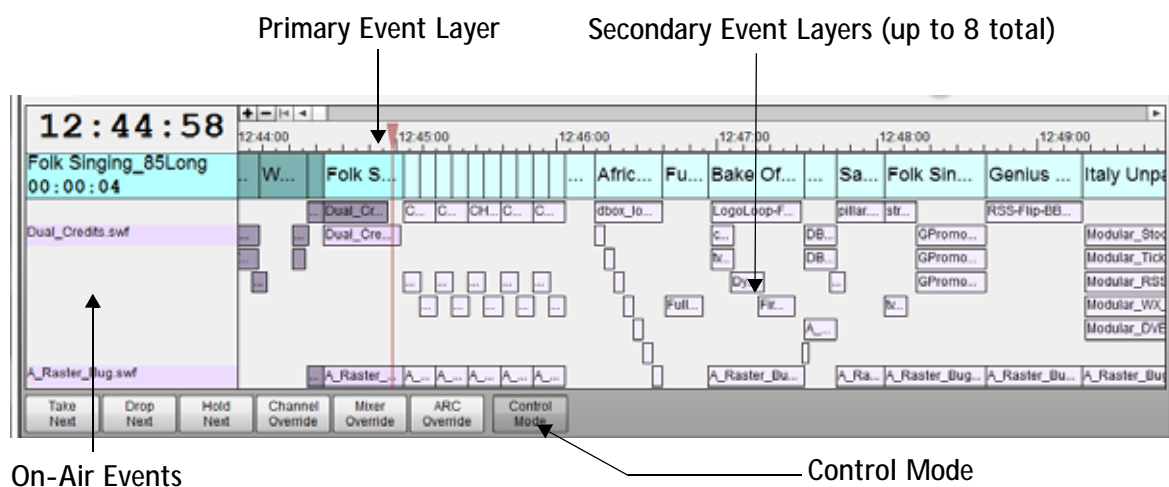


Figure 4–7: On-Air Primaries and Secondaries Area

To change your view of the timeline, from the menu bar, click **Timeline**. You can zoom in and out on the timeline, as well as scroll toward the past or future.

Click the **Control Mode** button to activate the following control buttons, which can be used to control the Playout Channel:



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**NOTE:** The availability of the control buttons is dependent on the configurations you made in SystemManager. Buttons will appear to be unavailable if that feature is not properly configured.

---

- **Take Next:** Plays the next primary event.
- **Drop Next:** Skips the next primary event.
- **Hold Next:** Holds the current primary event on-air. Hold Next can be canceled by toggling the **Hold Next** button or by clicking **Take Next**. If the duration of the current on-air event has not expired when the **Hold Next** button is toggled off, the primary event will remain on-air for its remaining duration. If the duration of the primary event expires while **Hold Next** is active, toggling the **Hold Next** button off will cause the next primary event to be taken.
- **Channel Override:** Refer to [Using Channel Override](#) for instructions on using the Channel Override feature.
- **Mixer Override:** Refer to [Using Mixer Override](#) for instructions on using the Mixer Override feature.
- **ARC Override:** Refer to [Using ARC Override](#) for instructions on using the ARC Override feature.



---

**TIP:** These controls are also available by clicking **Playlist Control** from the menu bar.

---

## Viewing the Event List

The Event List area displays a list of on-air and upcoming events to be handled by the OPC. If your video server is configured with a ChannelPort, you can monitor primary and secondary events (but only primary events on MediaPort 7000).

The following figure shows the Event List area.



Primary/Graphic Secondary Event Details  
(not all details shown in image)

Primary Event (teal, blue when selected)

S	E	Exp St Time	Material	T #	Duration	S Tran	E N	SOM	R	Sch St Time	#T
				L		Start Offset	I	E	End Offset	O	Stop Ani Lead
Y		12:45:02:15	bikeonbridgeMPEG851gop		00:00:04:00	Cut	D	P		17:09:20:17	
		12:45:02:15	CEPortCodec.swf	1		S +00:00:00:00		E +00:00:06:00			0
		12:45:02:15	TextBanner_hd851gop.swf	4		S +00:00:00:00	F	E +00:00:00:10	F		0
		12:45:02:15	A_Raster_Bug.swf	8		S +00:00:00:00		E +00:00:06:00			0
Y		12:45:08:15	bikeonbridgeMPEG8MbpsLGOP_SD		00:00:06:00	Cut	D	P		17:09:26:17	
		12:45:08:15	TextBanner_ad8Mbps.swf	5		S +00:00:00:00	F	E +00:00:00:10	F		0
Y		12:45:14:15	bikeonbridgeAVCI100		00:00:04:00	Cut	D	P		17:09:32:17	
		12:45:14:15	CEPortCodec.swf	1		S +00:00:00:00		E +00:00:06:00			0
		12:45:14:15	TextBanner_hdavci100.swf	4		S +00:00:00:00	F	E +00:00:00:10	F		0
		12:45:14:15	A_Raster_Bug.swf	8		S +00:00:00:00		E +00:00:06:00			0
Y		12:45:20:15	bikeonbridgeAVCI150		00:00:06:00	Cut	D	P		17:09:38:17	

Enable Editing

Secondary Events View

Secondary Event (purple, blue when selected)

Figure 4–8: Event List Area

When viewing the Event List, please remember the following:

- The Event List area shows current and upcoming events.
- As events are played, they will be removed from the Event List area.
- To toggle secondary event view on or off, click the **Secondary Event View** button (or, from the menu bar, click **View > Show Secondaries**).
- When primary or secondary events are selected in the Event List area, their details are shown in the Primary Event Details/Graphics Secondary Details area. Refer to [Viewing Event Details](#) for more information.
- To toggle editing mode on or off, click the **Enable Editing** button (or, from the menu bar, click **Edit > Edit Mode**). For more information about Editing events in PlayoutTool, refer to [Editing Events in PlayoutTool](#).





For a list of primary event icons that appear in the Event List area, refer to [Viewing Primary Event Icons and Status](#).

For a list of secondary event icons that appear in the Event List area, refer to [Viewing Secondary Event Icons and Status](#).

## Viewing Primary Event Icons and Status

The following table shows primary event icons and their statuses.


Table 4–2: Primary Event Icons

Primary Detail	Icon	Definition
Secondary Availability		No secondaries
		Secondaries present
		Secondaries present with errors
Error Summary		Primary or associated secondaries has errors

## Viewing Secondary Event Icons and Status

The following table shows secondary event icons and their statuses.

Table 4–3: Secondary Event Icons

Secondary Detail	Icon	Definition
Error Summary		Secondary has an error

## Viewing Event Details

The details of primary and secondary events can be viewed in the Primary Event Details/ Graphics Secondary Details area.

The Primary Event Details/Graphics Secondary Details area can be shown or hidden by clicking and sliding the expander located between the Primary Event Details/Graphics Secondary Details area and the Event List area.

### Viewing Primary Event Details

The Primary Details area displays a list of fields that contain information about primary events.

**To view the details of a primary event:**

1. Click **Details Display**.
2. Click on a primary event.

To close the Primary Event Details area, click the **Expand/Hide Detail Display** button.

The following figure shows the Primary Details area.












Figure 4–9: Primary Details Area

The following table shows primary event icons and status that appear in the Primary Event Details Area.

Table 4–4: Primary Event Details Icons

Primary Detail	Icon	Definition
Event Overdue		Primary or secondary event is overdue
Gap/Overlap Error		Primary or secondary event has gap or overlap; text field shows amount of gap or overlap
Material Availability		Primary material availability unknown
		Primary material available
		Primary material not available
		Primary material not playable

Table 4–4: Primary Event Details Icons

Primary Detail	Icon	Definition
Media Transfer Status		Transfer status unknown
		Media location queried
		Media not located
		Media located
		Transfer requested
		Media transferring
		Media transferred
		Transfer error
Data Error		A field in the event has invalid data

### Viewing Secondary Event Details

The Graphics Secondary Event Details area displays a list of fields that contain information about secondary events.

**To view the details of a secondary event:**

1. Click the **Secondary Events View** button.
2. Click **Details Display**.
3. Click on a secondary event.

To close the Graphics Secondary Event Details area, click the **Expand/Hide Detail Display** button.

The following figure shows the Graphics Secondary Details area.

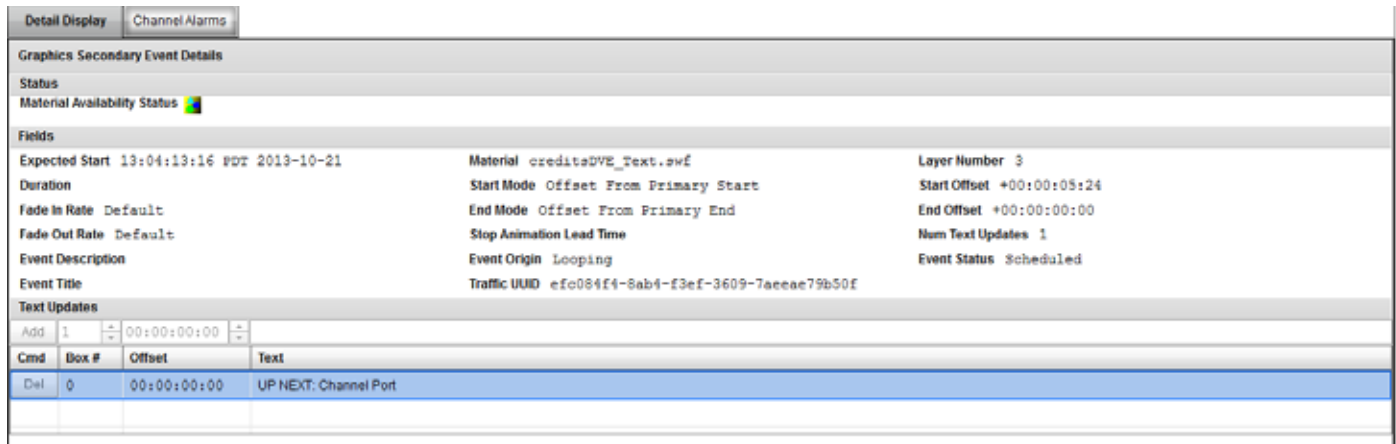











Figure 4–10: Graphics Secondary Detail Area

The following table shows secondary event icons and status that appear in the Secondary Event Details Area.

Table 4–5: Secondary Event Details Icons

Primary Detail	Icon	Definition
Starts too Soon Error		Secondary starts too soon
Secondary Conflict Error		Secondary conflicts with another secondary
Ends too Late Error		Secondary ends too late (too much overhang)
Ends before Starts Error		Secondary ends before its start (negative duration error)
Starts too Soon Error		Secondary starts too soon
Material Availability		Secondary material availability unknown
		Secondary material available
		Secondary material not available
		Secondary material not playable

Table 4–5: Secondary Event Details Icons

Primary Detail	Icon	Definition
Media Transfer Status		Transfer status unknown
		Media location queried
		Media not located
		Media located
		Transfer requested
		Media transferring
		Media transferred
		Transfer error
Data Error		A field in the event has invalid data

## Viewing Channel Alarms

When a channel has an alarm, the Channel Alarms button will change color. The colors correspond to the error colors listed in [Viewing Channel Selectors](#).

To open the Channel Alarm view, click **Channel Alarms**.

The following figure shows the Channel List Alarm view.

Detail Display		Channel Alarms					
Select All		Copy To Clipboard					
ID	Date	Time	Facility	Severity	State	Description	
10	2012-12-20	08:55:02:18	Timecode	Info	Clear	Time of day timecode feed seems stable	
9	2012-12-20	08:54:56:21	Timecode	Critical	Set	Time of day timecode feed is unstable	
8	2012-12-20	08:54:56:15	Timecode	Warning	Event	Adjusting system time by 00:00:00:03	
7	2012-12-20	08:54:03:02	Timecode	Warning	Event	Adjusting system time by 00:00:00:01	

Figure 4–11: Channel List Alarm View

In the Channel Alarms view, the following control buttons are available:

- **Select All:** Click to select all log entries.
- **Copy to Clipboard:** Click to copy the log.

Channel Alarm status is represented by the following colors:

- Green : Channel Alarm status is for “Info”
- Yellow : Channel Alarm status is “Warning.”
- Amber : Channel Alarm status is “Failure.”
- Red : Channel Alarm status is “Critical.”

To close the Channel Alarms view, click the **Expand/Hide Detail Display** button.

## Viewing Diagnostic Logs

The PlayoutTool diagnostic log displays logs created by PlayoutTool. Note that it does not display logs created by ChannelPort, the ChannelPort Playout Channel, OPC, or the MediaPort Playout Channel.

To open the Log View Window, from the menu bar, click **File > View Diagnostic Logs**.

The following figure shows the Log View Window.

Level	Date	Time	Message
INFO	2012-12-10	15:57:22.857	Opening channel playlist for Lab 1 (10.10.49.20:8224), Chan-D8_00015-24-1
INFO	2012-12-10	15:57:22.853	Opening channel playlist for Lab 1 (10.10.49.20:8223), Chan-D8_00015-23-1
INFO	2012-12-10	15:57:22.850	Opening channel playlist for Lab 1 (10.10.49.20:8222), Chan-D8_00015-22-1
INFO	2012-12-10	15:57:22.846	Opening channel playlist for Lab 1 (10.10.49.20:8221), Chan-D8_00015-21-1
INFO	2012-12-10	15:57:22.842	Opening channel playlist for Lab 1 (10.10.49.20:8220), Chan-D8_00015-20-1
INFO	2012-12-10	15:57:22.838	Opening channel playlist for Lab 1 (10.10.49.20:8219), Chan-D8_00015-19-1
INFO	2012-12-10	15:57:22.835	Opening channel playlist for Lab 1 (10.10.49.20:8218), Chan-D8_00015-18-1
INFO	2012-12-10	15:57:22.830	Opening channel playlist for Lab 1 (10.10.49.20:8217), Chan-D8_00015-17-1
INFO	2012-12-10	15:57:22.826	Opening channel playlist for Lab 1 (10.10.49.20:8216), Chan-D8_00015-16-1
INFO	2012-12-10	15:57:22.822	Opening channel playlist for Lab 1 (10.10.49.20:8215), Chan-D8_00015-15-1
INFO	2012-12-10	15:57:22.818	Opening channel playlist for Lab 1 (10.10.49.20:8214), Chan-D8_00015-14-1
INFO	2012-12-10	15:57:22.815	Opening channel playlist for Lab 1 (10.10.49.20:8213), Chan-D8_00015-13-1
INFO	2012-12-10	15:57:22.811	Opening channel playlist for Lab 1 (10.10.49.20:8212), Chan-D8_00015-12-1
INFO	2012-12-10	15:57:22.807	Opening channel playlist for Lab 1 (10.10.49.20:8211), Chan-D8_00015-11-1
INFO	2012-12-10	15:57:22.803	Opening channel playlist for Lab 1 (10.10.49.20:8210), Chan-D8_00015-10-1
INFO	2012-12-10	15:57:22.800	Opening channel playlist for Lab 1 (10.10.49.20:8209), Chan-D8_00015-9-1
INFO	2012-12-10	15:57:22.795	Opening channel playlist for Lab 1 (10.10.49.20:8208), Chan-D8_00015-8-1
INFO	2012-12-10	15:57:22.791	Opening channel playlist for Lab 1 (10.10.49.20:8207), Chan-D8_00015-7-1
INFO	2012-12-10	15:57:22.787	Opening channel playlist for Lab 1 (10.10.49.20:8206), Chan-D8_00015-6-1
INFO	2012-12-10	15:57:22.783	Opening channel playlist for Lab 1 (10.10.49.20:8205), Chan-D8_00015-5-1
INFO	2012-12-10	15:57:22.780	Opening channel playlist for Lab 1 (10.10.49.20:8204), Chan-D8_00015-4-1
INFO	2012-12-10	15:57:22.776	Opening channel playlist for Lab 1 (10.10.49.20:8203), Chan-D8_00015-3-1
INFO	2012-12-10	15:57:22.771	Opening channel playlist for Lab 1 (10.10.49.20:8202), Chan-D8_00015-2-1
INFO	2012-12-10	15:57:22.761	Opening channel playlist for Lab 1 (10.10.49.20:8201), Chan-D8_00015-1-1
INFO	2012-12-10	15:57:22.700	Setting up channel alarm list change notifications for Lab 1 (10.10.49.20:8224), Chan-D8_00015-24-1

Figure 4–12: Log View Window

In the Log View Window, the following control buttons are available:

- **Clear**: Click to clear all entries from the log.
- **Select All**: Click to select all log entries.
- **Copy to Clipboard**: Click to copy the log.
- **OK**: Click to close the Log View Window.

## Using Channel Override

Channel Override gives you the ability, if any undesirable material appears on-air, to quickly take a channel to black and to optionally display a pre-configured graphics template (for example, a “Technical Difficulties” graphic). After overriding the playlist on the channel, you can load a revised/corrected playlist to the Playout Channel, start the playlist running, and put the playlist back on-air by canceling the override.

Refer to Chapter 2, “Spectrum Onboard Playout Control” for information about loading a playlist to the Playout Channel.

Note that if Mixer Override is active for a playout channel, you must toggle it off before you can activate Channel Override, and vice-versa.

### Activating Channel Override

When you activate Channel Override, the following events occur (not necessarily in this order):

- The Master Control Switcher (MCS) on the ChannelPort switches to a player that puts the default “black” clip on air.
- If configured, a graphic template for playlist overrides is put on-air, on the configured layer. Refer to “Configuring a Playout Channel” in the *SystemManager User Guide* for more information.




---

**NOTE:** If OPC is running on a MediaPort 7000, no graphics template can be added in the event of a playlist override. If Channel Override is activated on a MediaPort channel, a “black” clip will be put on air.

---

- A status event is logged in the as-run log to record when the override was activated. Refer to Chapter 2, “Spectrum Onboard Playout Control” for information about the as-run log.
- An alarm is added in PlayoutTool to report Channel Override is active. Refer to [Viewing Channel Alarms](#) for more information.
- The Channel status indicates Channel Override is active. Refer to [Viewing the Channel Status Area](#) for information on viewing the Channel status.
- A log message is added to Syslog on the Spectrum video server.
- The as-run status of all on-air events (primary and secondary) indicates a failure (for example, “Preempted”).

When you cancel Channel Override, the following events occur (not necessarily in this order):

- The primary event that would have been on-air is “joined in progress” but graphics secondary events that would have been on-air are *not* re-joined.
- If used, the graphics template for the playlist override is cut down.
- An alarm is added in PlayoutTool to report the override has ended.
- The Channel status indicates Channel Override is canceled. The Channel Status icon will return to its default state, which is gray.
- A log message will be added to Syslog on the Spectrum video server.

#### To activate Channel Override:

1. Click the **Control Mode** button to enable control of PlayoutTool.
2. Click the **Channel Override** button.



3. Load a revised a playlist.  
Refer to Chapter 2, "Spectrum Onboard Playout Control" for instructions on loading playlists to the Playout Channel.
4. Click the **Channel Override** button again to cancel the override and rejoin events in the revised playlist.

## Using Mixer Override

Mixer Override gives you the ability, if needed, to quickly switch one mixer source with another. For example, if one source is playing clips from a player, you can override that setting and force the mixer to display a live external input.

The possible inputs for the Mixer Override depend on whether you are in Standard Channel or Enhanced Channel mode. However, regardless of which mode you are in, you can only have one input configured for Mixer Override per Playout Channel.

Note that if Channel Override is active for a playout channel, you must toggle it off before you can activate Mixer Override, and vice-versa.

Refer to "Configuring a Playout Channel" in the *SystemManager User Guide* for more information on configuring Mixer Override.




---

**NOTE:** Once you activate Mixer Override, it will run until you cancel it.

---

### Activating Mixer Override

When you activate Mixer Override, the following events occur (not necessarily in this order):

- The Master Control Switcher (MCS) on the ChannelPort switches to a different player, an external input, optional graphic, or the color generator.
- A status event is logged in the as-run log to record when the override was activated. Refer to Chapter 2, "Spectrum Onboard Playout Control" for information about the as-run log.
- An alarm is added in PlayoutTool to report Mixer Override is active. Refer to [Viewing Channel Alarms](#) for more information.
- The Channel status indicates Mixer Override is active. Refer to [Viewing the Channel Status Area](#) for information on viewing the Channel status.
- A log message is added to Syslog on the Spectrum video server.
- The as-run status of all on-air events (primary and secondary) indicates a failure (for example, "Preempted").

When you cancel Mixer Override, the following events occur (not necessarily in this order):

- The primary event that would have been on-air is "joined in progress."
- An alarm is added in PlayoutTool to report the override has ended.
- The Channel status indicates Mixer Override is canceled. The Channel Status icon will return to its default state, which is gray.
- A log message will be added to Syslog on the Spectrum video server.
- Secondary events that would have been in progress are not rejoined when the override is canceled.

#### To activate Mixer Override:

1. Click the **Control Mode** button to enable control of PlayoutTool.

2. Click the **Mixer Override** button.
3. Click the **Mixer Override** button again to cancel the override and rejoin events in the revised playlist.

## Using ARC Override

ARC Override gives you the ability, if needed, to quickly override the aspect ratio of a clip playing on the Primary Event layer. For example, if a clip playing on the Primary Event layer is has an aspect ratio of 4:3 it can be quickly upconverted to 16:9 if the ARC Override settings in SystemManager are configured as such.

Refer to “Configuring a Playout Channel” in the *SystemManager User Guide* for more information on configuring ARC Override.

### Activating ARC Override

When you activate ARC Override, the following events occur (not necessarily in this order):

- The ARC Override settings from SystemManager are applied and the aspect ratio of the clip is converted accordingly.
- A status event is logged in the as-run log to record when the override was activated. Refer to Chapter 2, “Spectrum Onboard Playout Control” for information about the as-run log.
- An alarm is added in PlayoutTool to report ARC Override is active. Refer to [Viewing Channel Alarms](#) for more information.
- The Channel status indicates ARC Override is active. Refer to [Viewing the Channel Status Area](#) for information on viewing the Channel status.
- A log message is added to Syslog on the Spectrum video server.

When you cancel ARC Override, the following events occur (not necessarily in this order):

- The next clip plays at its normal aspect ratio.
- An alarm is added in PlayoutTool to report the override has ended.
- The Channel status indicates ARC Override is canceled. The Channel Status icon will return to its default state, which is gray.
- A log message will be added to Syslog on the Spectrum video server.

**To activate ARC Override:**




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**NOTE:** When you activate ARC Override on a clip, it is only active for the duration of that clip.

---

1. Click the **Control Mode** button to enable control of PlayoutTool.
2. Click the **ARC Override** button.
3. Click the **ARC Override** button again to cancel the override and rejoin events in the revised playlist.

## Editing Events in PlayoutTool

Enabling editing mode in PlayoutTool allows you manipulate the placement of events on a timeline, and also allows you to add or delete future events on a schedule. You can also edit “Blocks,” which are primary events that have secondary events assigned to them.

When you enable editing, the following functions are available:

- Cut, Copy, Paste, and Delete Events/Blocks
- Insert primary/secondary events, as well as primary/secondary event comments
- Insert Playlists
- Change future events in the Event List area
- Edit text fields of secondary events (where applicable)

Choose from the following topics:

- [Enabling Editing Mode](#)
- [Inserting Primary Events](#)
- [Inserting Secondary Events](#)
- [Deleting Primary/Secondary Events](#)
- [Editing Secondary Event Text Fields](#)
- [Inserting a Playlist](#)
- [Loading a Playlist](#)

## Enabling Editing Mode

You enable editing by clicking **Edit > Edit Mode** from the menu bar, or by clicking the **Enable Editing** button located below the Event Lists area.

## Inserting Primary Events

When you insert a primary event it is placed directly above the currently selected event.

Inserting a primary event only creates a space for an event in the schedule. You must fill in the details of the event as needed.

**To insert a Primary Event:**



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**NOTE:** An error icon will appear and not clear until the event is properly edited.

---

1. Enable editing mode. Refer to [Enabling Editing Mode](#) for instructions.
2. From the menu bar, click **Edit > Insert Event > Primary**.
3. From the Event List area, click the **Material** field (marked by red), and type in the Material ID of the primary event.
4. Click the **Duration** field (marked by red), and set the Duration of the primary event.
5. Click other fields to edit them as needed.

## Inserting Secondary Events

You can insert secondary events under primary events. The newly inserted event will be placed on the layer that you assign when you edit the event.

**To insert a Secondary Event:**

1. Enable editing mode. Refer to [Enabling Editing Mode](#) for instructions.
2. From the menu bar, click **Edit > Insert Event > Secondary Graphics**.
3. From the Event List area, click the **Material** field (marked by red), and type in the Material ID of the secondary event.
4. To assign the layer the event will appear on, click the **Layer** field, and set the layer number.

5. Click other fields to edit them as needed.

## Editing Secondary Event Text Fields

If you have a secondary event that has editable text fields, you can make changes to those text fields from PlayoutTool.

### To edit the text fields of a Secondary Event:

1. Enable editing mode. Refer to [Enabling Editing Mode](#) for instructions.
2. Select the secondary event that has the text field(s) you want to edit.
3. Click **Detail Display**.
4. In the **Graphics Secondary Details** pane, scroll down to **Text Updates** settings.
5. In the **Text** box, type in new text, and select the corresponding **Box** number for the text.
6. If necessary, alter the **Offset** time.
7. Click **Add**.
8. Repeat Steps 5-6 to edit additional text fields in the template as necessary.

## Inserting a Playlist

You can insert a playlist on any Playout Channel that is running. For example, if you have a block of programming that needs to be replaced, you can select and delete that block (refer to [Deleting Primary/Secondary Events](#)), and then insert a new playlist to play in the deleted slot, provided the start time of the new playlist matches the start time of the deleted events.

You can also insert a new playlist to “follow” the currently executing playlist.

### To insert a playlist:

1. Enable editing mode. Refer to [Enabling Editing Mode](#) for instructions.
2. If necessary, delete any events that need to be replaced.
3. From the menu bar, click **Edit > Insert Playlist**.
4. Navigate to the playlist you want to insert, and click **Open**.



**NOTE:** The start mode of the playlist will determine if any more manual intervention is needed. If the playlist has a manual start mode, you will need to enable Control Mode and click Take Next at the appropriate time.



**NOTE:** When inserting a playlist, PlayoutTool ignores the channel name and schedule start date/time metadata from the playlist file (xml file), but does check the frame rate. If there is a frame rate mismatch, the events will not be inserted.

After the inserted playlist executes, the inserted events will be included in the as-run file for the schedule. For instructions on retrieving the as-run file, refer to “Retrieving a Spectrum As-run List” in Chapter 2, “Spectrum Onboard Playout Control.”

## Loading a Playlist

Loading a playlist applies only to channels that are not running (in other words, channels that are stopped.) When you stop a channel, you “flush” the channel of any remaining playlists. When you load a new playlist on a stopped channel, you can allow the playlist to start at its assigned time, manually execute the playlist from the beginning, or “join” the playlist in real time.

When you use the “join” function, PlayoutTool will ignore any previously scheduled events in the playlist.

Consider the following examples:

If you are demonstrating PlayoutTool functionality at a trade show, and matching your playlist to real time is not important, you can simply enable Control Mode, load your playlist, click Start, and allow the playlist to execute as is.

However, if you have a stopped channel and need the playlist to match real time (for example, it's almost 6 pm, and event X is scheduled in the playlist to air at 6 pm), you can enable Control Mode, load the playlist, and click Join to start the playlist in real time.

When you use join functionality, PlayoutTool will ignore any previously scheduled events in the playlist.

**To load a playlist:**

1. Click **Control Mode** (or from the menu bar, click **Playlist Control > Control Mode**), to enable Control Mode.
2. From the menu bar, click **Playlist Control > Stop** to stop the channel.
3. Click **Playlist Control > Load**.
4. Navigate to the playlist you want to insert, and click **Open**.
5. Depending on your needs, choose from one of the following to start the playlist:
  - Click **Playlist Control > Start > Take Next**.
  - Click **Playlist Control > Join**.

After the inserted playlist executes, an as-run file will be created and sent to the asrun folder. For instructions on retrieving the as-run file, refer to "Retrieving a Spectrum As-run List" in Chapter 2, "Spectrum Onboard Playout Control."

## Deleting Primary/Secondary Events

When you delete a primary/secondary event, the event is deleted from the playlist and is no longer available for pasting if it has been copied.

**To delete a Primary/Secondary Event:**

1. Enable editing mode. Refer to [Enabling Editing Mode](#) for instructions.
2. Select the event you want to delete.
3. From the menu bar, click **Edit > Delete Event/Block**.
4. In the confirmation dialog box, click **Yes**.

## PlayoutTool Keyboard Shortcuts

The following table shows keyboard shortcuts available in PlayoutTool.

Key Stroke	Function
Ctrl/Cmd + B	start block
Ctrl/Cmd + C	copy
Ctrl/Cmd + E	enable Edit Mode
Ctrl/Cmd + F	find
Ctrl/Cmd + I	insert primary event
Ctrl/Cmd + K	enable Control Mode

Key Stroke	Function
Ctrl/Cmd + L	view diagnostic logs
Ctrl/Cmd + V	paste
Ctrl/Cmd + X	cut
Ctrl/Cmd + [	scroll timeline towards past
Ctrl/Cmd + ]	scroll timeline towards future
Ctrl/Cmd + \	return timeline to now
Ctrl/Cmd + -	timeline zoom out
Ctrl/Cmd + =	timeline zoom in
Ctrl/Cmd + DEL	delete event/block
Cmd + H (Mac OS X only)	hide application
Cmd + M (Mac OS X only)	minimize application
Cmd + O (Mac OS X only)	open file
Cmd + Q (Mac OS X only)	quit
Alt + Ctrl/Cmd + A	move to channel alarms and events
Ctrl/Cmd + Alt + B	cancel block
Ctrl/Cmd + Alt + C	copy event/block
Ctrl/Cmd + Alt + E	move to event list
Ctrl/Cmd + Alt + F	replace
Ctrl/Cmd + Alt + I	insert comment
Ctrl/Cmd + Alt + O	insert playlist
Ctrl/Cmd + Alt + S	start playlist
Ctrl/Cmd + Alt + T	start dictation
Ctrl/Cmd + Alt + V	paste event/block
Ctrl/Cmd + Alt + X	cut event/block
Ctrl/Cmd + Alt + .	move to detail display
Ctrl/Cmd + Alt + -	show previous channel
Ctrl/Cmd + Alt + =	show next channel
Ctrl + Alt + DEL	delete
Cmd + D (Mac OS X only)	toggle dock
Cmd + H ((Mac OS X only)	hide others

Key Stroke	Function
Ctrl/Cmd + Shift + A	show channel alarms and events
Ctrl/Cmd + Shift + D	edit auto duration
Ctrl/Cmd + Shift + F	find material
Ctrl/Cmd + Shift + G	show secondaries
Ctrl/Cmd + Shift + H	hide bottom pane
Ctrl/Cmd + Shift + I	insert secondary event
Ctrl/Cmd + Shift + .	show detail display
Cmd + Shift + / (Mac OS X only)	show help
Cmd + Shift + 4 (Mac OS X only)	screen capture, area to file
Ctrl/Cmd + Alt + Shift + A	enable Arc Override
Ctrl/Cmd + Alt + Shift + C	clear playlist
Ctrl/Cmd + Alt + Shift + F	find next error
Ctrl/Cmd + Alt + Shift + H	enable Hold Next
Ctrl/Cmd + Alt + Shift + I	insert secondary comment
Ctrl/Cmd + Alt + Shift + J	join playlist
Ctrl/Cmd + Alt + Shift + L	load playlist
Ctrl/Cmd + Alt + Shift + M	enable Mixer Override
Ctrl/Cmd + Alt + Shift + N	drop next
Ctrl/Cmd + Alt + Shift + P	enable Channel Override
Ctrl/Cmd + Alt + Shift + S	stop playlist
Ctrl/Cmd + Alt + Shift + T	take next

# Appendix A

## Contacting the Technical Assistance Center

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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	<a href="mailto:support@harmonicinc.com">support@harmonicinc.com</a>
EME	+44.1252.555.450	<a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a>
Asia Pacific – Other Territories	+852.3713.9300	<a href="mailto:hongkongtechsupport@harmonicinc.com">hongkongtechsupport@harmonicinc.com</a>
India	+44.1252.555.450	<a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a>
Russia	+7.495.926.4608	<a href="mailto:rusupport@harmonicinc.com">rusupport@harmonicinc.com</a>
Africa	+44.1252.555.450	<a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a>
Mainland China	+86.10.8391.3313	<a href="mailto:chinatechsupport@harmonicinc.com">chinatechsupport@harmonicinc.com</a>

**Table A-2: For Production and Playout (Legacy Omneon and Rhonet) Products**

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



**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)  
Fax.+1.408.542.2511

