

# Spectrum System Release Notes 8.3

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# Introduction

These notes provide important information regarding the Spectrum System 8.3 Software Release.

In order to use Spectrum 8.3, you must have the SystemManager 6.7 Release.



# **High Impact Notices**

# License Enforcement in Spectrum 8.3 and SystemManager 6.7

With Spectrum 8.3 and SystemManager 6.7, licenses are enforced. With this release, SystemManager does not allow you to disable license enforcement. If license enforcement has previously been disabled on your system, Harmonic strongly recommends that you work with Harmonic Technical Support to verify the operation of your system once you have updated your system software.

## **Upgrading from Earlier Releases**

If you are running 7.9.x, 8.0.x, 8.1.x, or 8.2, you cannot upgrade directly to 8.3. First upgrade to 8.2.1, and then upgrade to release 8.3.

If you are running 7.8.x, first upgrade to 7.9, then upgrade to 8.2.1, and then upgrade to release 8.3.

# Verify "MSX" Cable Before Using Spectrum X for UHD Record or Playout

The Spectrum X contains a cable that connects the two SDI I/O boards (referred to as Diamond Boards in the software), and is required in order for UHD to work. Some Spectrum X units shipped without the cable installed. Verify the cable is installed before attempting to play UHD.

Connect to the Spectrum X via SSH, and then run the following command:

/opt/omneon/diag/bin/diamond\_healthcheck --board=1

The highlighted portion of the following example shows the cable is present.



```
[root@D13_00021 bin] #
/opt/omneon/diag/bin/diamond_healthcheck --board=1
    Pinot FPGA Version 0.0 Service: 0 Hotfix: 4
    SubVersion Revision: 271138. Dirty bit: 0
    Built 21:19:00 06/02/16
    Variant: 00020004 (Unknown)
    Instance 1 PCI ID:1b57:194 detected at 06:00.0
    PCIE Negotiated Link Speed: 8.0Gbs x8
    Check Bank A DMA to/from FPGA memory
    Check Bank B DMA to/from FPGA memory
    Diamond board 0 to Diamond Board 1 MSX cable detected.
    Diamond Board 1 selfcheck passed.
```

The highlighted portion of the following example shows the cable is NOT present.

```
[root@D13_00015 ~] # /opt/omneon/diag/bin/diamond_healthcheck --board=1
    Pinot FPGA Version 0.0 Service: 0 Hotfix: 4
    SubVersion Revision: 271138. Dirty bit: 0
    Built 21:19:00 06/02/16
    Variant: 00020004 (Unknown)
    Instance 1 PCI ID:1b57:194 detected at 06:00.0
    PCIE Negotiated Link Speed: 8.0Gbs x8
    Check Bank A DMA to/from FPGA memory
    Check Bank B DMA to/from FPGA memory
ERROR: No Diamond board 0 to Diamond Board 1 MSX cable detected.
```

If the cable is missing, contact your Harmonic Technical Support or your Harmonic representative to report the problem and place an order for the missing cable. When you place the order, note that the part number for the cable is SPR-SPECT-SDI-IO-SYNC-CABLE.

Also note that if a Spectrum X system is configured for UHD channel and the "MSX" cable is missing, Spectrum will generate log messages similar to the following:

```
F2F Cable: Missing cross-board cable (01010101,01010101) (12345 - 300)
```

# Player Type and EE Mode Settings

When configuring a Spectrum X player for UHD playout, use only **Player Type**: **Branded** and **EE Mode**: **Never**. For UHD Record, use only **Player Type**: **Branded** and **EE Mode**: **Normal**.

When configuring any player for the Spectrum X, use only the following combinations of **Player Type** and **EE Mode** settings to achieve the lowest latency when the player switches states. (VSG-13478)

For this Spectrum X player	Select these Player Type and EE Mode options
Play-only player with or without branding (including UHD players)	<ul> <li>Player Type: Branded</li> <li>EE Mode: Never (preset with Branded players)</li> </ul>



For this Spectrum X player	Select these Player Type and EE Mode options
Record-only player	<ul> <li>Player Type: Record</li> <li>EE Mode: Never (for lowest latency)</li> <li>EE Mode: Normal</li> </ul>
UHD Record player	• EE Mode: Normal
Play and Record player	<ul><li>Player Type: Hybrid</li><li>EE Mode: Never</li></ul>

# **About Spectrum Management Players**

If you are using Spectrum Management in addition to SystemManager, please note that Players created with Spectrum Management cannot be modified, deleted, activated, or de-activated using SystemManager. SystemManager will display players created with Spectrum Management in read-only mode. To modify these players, use Spectrum Management. For Help with using Spectrum Management, click the Help button in the application.



# **New Features**

# Spectrum X Features

Feature	Description
Support for UHD Record	With this release, you can use Spectrum X to record UHD material with the following media and wrapper format:
	XAVC Class 300 with the MXF OP1a wrapper
	This is a licensed feature. For details on creating a UHD player, see "Creating an AVC-Intra UHD player" in the <i>SystemManager User Guide</i> . For more details on media and wrapper support, see <i>Spectrum Media and Wrapper Formats</i> .
Support for VC-3 Play	This release provides support for playout of the VC-3 media format with Spectrum X.  This is a licensed feature. For details on creating a VC-3 Player, see "Creating a DNxHD /VC-3 player" in the <i>SystemManager User Guide</i> .
Support for SMPTE 2022-6	With this release, you can use Spectrum X with a 10 Gb I/O module to input and output SMPTE 2022-6 streams. See Spectrum Release 8.3 Spectrum X Configuration Guidelines for details. This is a licensed feature.
	For details on configuring your system for 2022-6, see "Configuring SMPTE 2022-6" in the <i>SystemManager User Guide.</i>
Support for PTP reference	With this release, a Spectrum X configured for SMPTE 2022-6 can use PTP reference. For details, see "Configuring network settings for the 10 Gb I/O modules" in the <i>SystemManager User Guide.</i>
Preview clips from Harmonic MediaGrid or NAS	With this release, a Spectrum X in "diskless mode" can be used to Preview content for Automation by mounting an external Harmonic MediaGrid or NAS file system and directly accessing clips. The ability to mount a Harmonic MediaGrid or NAS file system is a licensed feature.
	For details, see "Previewing material from a Harmonic MediaGrid or NAS" in the SystemManager User Guide.



Feature	Description
Support for Audio Watermarking	With this release, you can add audio watermarks to a Spectrum X channel during playout using Kantar <sup>®</sup> Media Watermarking. This is a licensed feature.
	For details, see "Configuring audio watermarking" in the SystemManager User Guide.
	If you wish to use audio watermarking in combination with SMPTE 2022-6, please contact your Harmonic representative.
Support for Transport Stream Ingest	With this release you can configure Spectrum X to record a selected program from a network transport stream, wrapped as .MXF or .MXF low latency, to the Spectrum file system. This is a licensed feature.
	For configuration details, see "Configuring transport stream ingest" in the SystemManager User Guide.
	Note that this release also adds support for ARIB Audio Metadata (AAM) and Captions with transport stream ingest. When configured for transport stream ingest, Spectrum X will rewrap ARIB captions or metadata if present in the program source.
Support for RouteTables with 2022-6 or transport stream parameters	With this release, you can configure RouteTables which contain parameters for your SMPTE 2022-6 or transport stream network(s). Each RouteTable can be used as a template when configuring your channel settings or a compressed stream player. For details, see "Configuring RouteTables" in the <i>SystemManager User Guide</i> .

# MediaStore 5100 series

Feature	Description
Introducing the MediaStore 5100 series	The MediaStore 5100 connects to the MediaDirector 2252B/2251B via 12 Gb/s SAS to provide 24-disk drive capacity, all contained in a 2 RU chassis. Drive options include: 300 GB, 600 GB, or 1.2 TB SAS hard disk drives.
	For installation instructions and hardware reference details, see the <i>Spectrum System Installation Guide</i> .



# MediaCenter 2200-DS

Feature	Description
Introducing the MediaCenter 2200B-DS	This release introduces the MediaCenter 2200B-DS. This model provides dual redundant SAS connectivity to the MediaStore 7100.  For installation instructions and hardware reference details, see the <i>Spectrum System Installation Guide</i> . See Spectrum Release 8.3 MediaCenter Configuration Guidelines in these release notes for configuration details.

# **General Features**

Feature	Description
Introducing Delay Service	Delay Service adds real time program delay capability to the Spectrum system. With this licensed service, Spectrum can provide up to 24 simultaneous delayed outputs, or delay channels, for every ingest. Delay Service provides three models of delay:
	<ul> <li>Simple: In this model, the same Spectrum video server ingests material and plays it out with a specified delay.</li> <li>Grid: In this model, a Spectrum X ingests material and exports it, using Auto-Export, to</li> </ul>
	<ul> <li>the Harmonic MediaGrid. Other systems access the material via Media Fetch, and play it out with a specified delay.</li> <li>Grid mirrored: In this model, two Spectrum X systems ingest the same material and</li> </ul>
	export it, via Auto-Export, to separate folders on the Harmonic MediaGrid. Other  Spectrum X systems access the material via Media Fetch, play it out with a specified
	delay, and can fail over to the "standby" folder if the first becomes unavailable.
	For details on accessing Delay Service, see "Configuring Delay Service" in the <i>SystemManager User Guide</i> . Details on configuring are also available in that section or in the Delay Service online Help. Note that the Grid and Grid mirrored models require licenses for Media Fetch and AutoExport as well as the NAS-MOUNT license.



# Polaris Play Features

Feature	Description
Improved time delay when replacing the current playlist	If you use the file system to load a playlist that is meant to replace a live playlist, current timeline events can be modified as soon as eight seconds after the replacement playlist is loaded by Playlist Control. In addition, events that span this window will be truncated if they are replaced.

## **FXTool Features**

Feature	Description
Configure external I /O sources	If you are using a Spectrum X that has been enabled for IP input and output, you can configure FXTool to use IP sources for that channel. For more information, refer to "Configuring External I /O Sources" in the <i>Spectrum Tools User Guide</i> .



# Fixed Issues

The following table includes issues that have been resolved in this release.

Key	rn summary - resolved
VSG- 15080	When ingesting a transport stream, if the stream was removed from the network, the player incorrectly stopped, rather than inserting black frames as expected.
VSG- 14978	In some cases, when a Spectrum system was upgraded, some players could not be activated due to bandwidth errors.

2 issues

## Additional Fixed Issues

Key	Description
PPLY- 1688	In some cases, when using Playlist Control with the Spectrum X, executing a Take Next to start a playlist directly after a live event has played could result in black frames appearing prior to the clip.
ESM- 1773	When using Spectrum Management to configure a playout channel, if the frame rate for the player associated with the playout channel was changed, the playout channel settings was not always correctly updated with the new frame rate.
ESM- 1869	Spectrum Management incorrectly allowed you to configure EAS for a channel that was not licensed for EAS.



# Compatibility and Packaging

## Compatibility

The components of a Spectrum System (SystemManager, Spectrum video servers, MediaStores, and I/O modules) are designed and tested to run together. Interoperability between components running different versions of the system software is not supported. All components of a Spectrum System should be upgraded to this Spectrum system software release together.

Spectrum provides backwards compatibility, that is, a newer release can play content from an older release. Recommended practice is to upgrade Playout servers, then upgrade Ingest servers, if Playout and Ingest are on different systems. Harmonic does not guarantee that older releases can play clips generated by newer releases.



Product:	Spectrum™ System
Software Version:	Release 8.3
Supports SystemManager:	6.7.0.0
Supports Harmonic MediaGrid:	4.1
Supports MAS:	3.7.1.x
Supports ProBrowse:	2.6. Uses media.dll 6.2 to import Spectrum compatible content.
Supports ProMedia Carbon:	3.28.00.51077. Uses media.dll 6.1 to import QuickTime Ref generated by Spectrum. Uses non-spectrum dll to import all other wrapper types. Support is not deterministic. Clips that do not import will need to be examined on a case by case basis.
Supports Workflow System (WFS):	2.2.0.6. Uses media.dll 6.1 to import QuickTime Ref generated by Spectrum. Uses non-spectrum dll to import all other wrapper types. Support is not deterministic. Clips that do not import will need to be examined on a case by case basis.
Supports Polaris Play: Ingest	2.2.1.3
Supports Polaris Advance	1.4.0.0
Supports Polaris Live	2.0.0.0



#### A Note

If you are upgrading from a very old release of Spectrum software, before upgrading your system to the latest release, contact Harmonic Technical Support to obtain copies of the Release Notes for all intermediary releases, up to and including the release you wish to install. Carefully review the Release Notes for each intermediary release.



Immediately after upgrading the SystemManager, upgrade all Spectrum video servers and I/O modules on a given EFS, and restart. Contact Harmonic Technical Support to discuss upgrade planning or to discuss specific configuration or interoperability issues.

## System Software Release Packaging

Software updates are available from the Harmonic website. Contact Harmonic Technical Support for login information.

The full download consists of the following:

- Spectrum-v8.3-Software.exe. This includes system software.
- Spectrum-v8.3-Documentation.exe. This includes product documentation.
- HarmonicTemplatesAndTools-v8.3-SWandDoc.exe. This includes the template authoring package, tools, and documentation, as well Polaris Play: Playlist Control tools and documentation.

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



## Software Installation Instructions

- Quiescent System State During Upgrade
- Handling Device Upgrade Failures
- Installing or Upgrading the SystemManager Software
- Overview: Upgrading Spectrum Video Server and I/O Module Firmware
- Upgrading Spectrum Video Server Firmware
- Upgrading I/O Module Firmware
- Restarting the I/O Modules
- Restarting the Spectrum Video Server
- Verifying Disk Drive Firmware
- Upgrading Disk Drive Firmware
- Verifying that MediaDirectors in EFS Have Common View of Disks, RAID Sets, and File System

Please carefully review the *Spectrum System Installation Guide*, *SystemManager Installation Guide*, and the release notes for each product prior to commencing firmware, or SystemManager application installation.

Refer to the *SystemManager Installation Guide* for the most up-to-date SystemManager installation procedure. Refer to the *SystemManager Release Notes* for the latest product information. To download the SystemManager software and documentation, contact Technical Support. Documentation is available in the following file: **SystemManager-v**<*version#*>-**Documentation.exe**.

## Quiescent System State During Upgrade

When upgrading Spectrum I/O modules, ensure that no recording or playback is taking place; make sure all players are stopped. Also ensure that no file copies or transfers are in progress internally or on the Ethernet port. Upgrade all Spectrum I/O modules at the same time. Before commencing any player or file activity, verify that all Spectrum I/O modules and Spectrum servers are running the same version of firmware as shown on the SystemManager **Upgrade Firmware** page under the **Home** tab. In addition, prior to upgrading disk drive firmware, stop the file system on every Spectrum server. If you attempt to upgrade the Spectrum server or I/O module during player or file activity, playout may be compromised, or file corruption may occur.



#### Important!

MediaDirectors on an EFS need to run the same firmware revision or risk file system corruption. To avoid corruption, when upgrading MediaDirectors on an EFS, first stop the file system on all MediaDirectors, then upgrade all MediaDirectors at the same time. Once upgrades are complete on all MediaDirectors, restart the file system on each MediaDirector.



## Handling Device Upgrade Failures

If a failure occurs when upgrading a device, the SystemManager will generate an Upgrade Failed alarm. If a device has an Upgrade Failed alarm, the SystemManager will not let you perform another upgrade until the Upgrade Failed alarm is cleared. To clear alarms, follow these steps:

- 1. Click on the Diagnostic tab on the SystemManager menu bar.
- 2. Click on the View Alarms icon on the left of the screen to display the View Alarms field.
- 3. Click on the **Clear alarms** button to clear the **Upgrade Failed** alarms.
- 4. Start another upgrade.

## Installing or Upgrading the SystemManager Software

The SystemManager application is packaged in a comprehensive installer file which installs the SystemManager application and other components required for the successful operation of the SystemManager. An installation wizard is available to guide you; however, you will need to choose between options during the installation process. Refer to the *SystemManager Installation Guide* for an explanation of the procedure and the choices you need to make during the installation process.

# Overview: Upgrading Spectrum Video Server and I/O Module Firmware

It is important that you upgrade the Spectrum video server firmware and I/O Module firmware in the following order:

- Follow the instructions for Upgrading Spectrum Video Server Firmware.
   Do not restart the video server at this time.
- 2. Follow the instructions for Upgrading I/O Module Firmware.
- 3. Follow the instructions for Restarting the I/O Modules.
- 4. Follow instructions for Restarting the Spectrum Video Server.text



#### Important!

If you upgrade the video server and *restart* before upgrading your I/O module, you may not be able to perform the I/O module upgrade.



## Upgrading Spectrum Video Server Firmware



#### Mote

Bring the system to a quiescent state as discussed in Quiescent System State During Upgrade before commencing a video server upgrade.

Before upgrading to the latest version of firmware, check with your automation, archival, and third party software vendors for compatibility information.

Use the following steps to upgrade video server firmware from the **Upgrade Firmware** page. This method allows you to upgrade one or more Spectrum video servers.



#### Warning!

You cannot have Spectrum servers with different versions on the same file system; to ensure file system integrity, upgrade all Spectrum servers at the same time.

With the SystemManager software properly installed, log on to the SystemManager application.

- 1. Click the Home tab.
- 2. In the left-hand column, click the Firmware Selection icon to display the Firmware Selection page.
- 3. Click the radio button for the desired version of firmware. When the confirmation dialog box appears, click **OK**. Note that this selection chooses the directory from which firmware upgrade files will be selected; the selection does not perform the upgrade.
- 4. From the Home tab, click the Upgrade Firmware icon in the left-hand column to display the Upgrade Firmware page.
- 5. In the **Spectrum servers** section, select the video servers you want to upgrade.
- 6. Click the **Upgrade** button. A dialog box will appear asking you to confirm or cancel the upgrade.
- 7. Click **OK** to upgrade the selected video servers, or click **Cancel** to exit the procedure safely without upgrading.
- 8. When the upgrade process is complete, proceed with Upgrading I/O Module Firmware.



#### Warning

Do not restart the video server(s) until you have finished upgrading and restarting the I/O modules.



## Upgrading I/O Module Firmware

Before upgrading to the latest version of software, check with your automation, archival, and third party software vendors for compatibility information.

Use the following steps to upgrade your I/O module (for example, ChannelPort) firmware from the **Upgrade Firmware** page. This method allows you to upgrade one or more I/O modules.



#### Warning!

You cannot have I/O modules with different versions on the same system.

If you have received a new SystemManager CD-ROM that includes a specific I/O module, the **Software Installation** instructions must be followed completely. This ensures that new software is placed properly in the **D:\Upgrades** directory.

To upgrade a Spectrum I/O module:

- 1. With the SystemManager software properly installed, log on to the SystemManager application.
- 2. Click the Home tab.
- 3. In the left-hand column, click the Firmware Selection icon to display the Firmware Selection page.
- 4. Click the radio button for the desired version of firmware. When the confirmation dialog box appears, click **OK**. Note that this selection chooses the directory from which firmware upgrade files will be selected; the selection does not perform the upgrade.
- 5. Click the Home tab.
- 6. In the left-hand column, click the **Upgrade Firmware** icon to display the **Upgrade Firmware** page.
- 7. Scroll to the **I/O Modules** section of the page.
- 8. Click the check boxes for the I/O modules whose firmware you want to upgrade.
- Click the Upgrade button. The Upgrade I/O Modules Now page appears with a list of the selected I/O modules.
- 10. Click **OK** to upgrade the selected I/O modules, or click **Cancel** to exit the procedure safely.
- 11. When the upgrade process is complete, continue to Restarting the I/O Modules.

## Restarting the I/O Modules

- 1. On the SystemManager **Upgrade Firmware** page, scroll to the **I/O Modules** section.
- 2. Select the I/O modules you just upgraded, and then click the **Reboot** button. The **Reboot I/O Modules Now** page appears.
- 3. Click **OK** to restart the selected I/O modules or click **Cancel** to exit the procedure safely.
- 4. Proceed with Restarting the Spectrum Video Server. Note that you can begin restarting your video server while the MediaPort/ChannelPort(s) are still restarting.



## Restarting the Spectrum Video Server

- 1. On the SystemManager **Upgrade Firmware** page, scroll to the **Spectrum Servers** section.
- 2. Select the Spectrum video servers that you recently upgraded and then click the **Reboot** button. The **Reboot Spectrum Servers Now** page appears.
- 3. Click **OK** to restart the selected Spectrum video servers, or click **Cancel** to exit the procedure safely.

## Verifying Disk Drive Firmware

- 1. From the **Configuration** tab, click the **Disk Utilities** icon in the left-hand column and then click the icon for any MediaDirector to open the **Disk Utilities** page for that MediaDirector.
- 2. Click the **Upgrade Disk Firmware** button.
- Compare the Firmware Rev. Level and New Firmware Available columns for each drive. If any drives are running earlier firmware than is available, proceed to upgrade disk drive firmware.

## **Upgrading Disk Drive Firmware**



#### Mote

If you wish to upgrade disk drive firmware for a MediaCenter disk drive, please contact Harmonic Technical Support for assistance.

Before upgrading disk drive firmware, check the following:

- Verify that startup is complete
- Ensure that the most recent release of SystemManager has been installed.
- Ensure that no recording or playback is taking place on the entire system.
- Ensure that all players have been stopped.
- Ensure that no file copies or transfers are in progress.



#### To install the Spectrum firmware upgrade:



### Warning!

- Failure to perform this procedure in the correct order could cause performance issues or data loss.
- Be sure to maintain power to the system throughout the drive firmware upgrade procedure.
   Loss of power during upgrade may render a drive inoperable and require a replacement or cause a loss of content.
- 1. From SystemManager, click the **Configuration** tab.
- 2. Click **Disk Utilities** to display the **Disk Utilities** for all MediaDirectors and MediaCenters.
- 3. Click the device that contains the disk drive(s) you want to upgrade. The **Disk Utilities** for the selected device will appear.
- 4. Under **Logical View**, click the link to the file system.
- 5. On the Filesystem Properties page, click Stop FS.



#### Note

Make sure that ALL MediaDirectors connected to the file system show that the file system is stopped. Failure to stop the file system before the disk drive firmware upgrade can cause file system corruption.

- 6. Return to the **Disk Utilities** page.
- 7. Under Physical View, click Upgrade Disk Firmware.
- 8. Select the check boxes for the drives you want to upgrade, or select **Select all Disks** (recommended). You cannot have disks with different versions within a RAID set.
- 9. Click **Start Upgrade Firmware**, and then click **OK** on the confirmation dialog that appears to start the upgrade, or click cancel to the exit the procedure safely without upgrading.
- 10. Once the upgrade is complete, reboot the MediaDirector, MediaCenter, or MediaDeck.

After you reboot the MediaDirector, the file system should start automatically. If this does not happen, refer to "Starting a File System" in the *Harmonic SystemManager User Guide* for instructions on restarting the file system.



# Verifying that MediaDirectors in EFS Have Common View of Disks, RAID Sets, and File System

Prior to taking any action on a Disk Drive, RAID Set, File System, or MediaStore interface, it is important to verify that all MediaDirectors in an Extended File System (EFS) have a common view of disks, RAID Sets and MediaStores. This procedure can be found in the *Harmonic SystemManager User Guide*. It is also available in the Help System and can be found by entering "Common View of Disks" in the Search box and selecting the "Verifying that MediaDirectors in EFS have a Common Views of Disks, Raid Sets, and File System" link.

When a drive is dead and has been removed from the system, the drive's information still remains on the **Disk Utilities** screen and in the SystemManager database. Select the **Remove Drive** button on the Drive Properties page of the SystemManager to remove the drive from the associated MediaDirector. In an EFS setup, you must remove the "dead" drive from each of the MediaDirectors in the system or you will receive alarms in the SystemManager stating F/C Loop views are inconsistent between MediaDirectors.

## Polaris Play 8.3 Installation Instructions

The Polaris Play software application suite is a separate licensed product delivering automated playout and traffic integration. For complete instructions on using Polaris Play: Playlist (Playlist) and Polaris Play: Scheduler (Scheduler), refer to the *Polaris Play: Playlist User Guide*.

## Playlist System Requirements

Operating System	Requirements
Windows	<ul> <li>2.33GHz or faster x86-compatible processor or Intel® Atom™ 1.6GHz or faster processor for netbooks</li> <li>One of the following Windows versions: <ul> <li>Windows Server 2003</li> <li>Windows Server 2008</li> <li>Windows Vista Home Premium, Business, Ultimate, or Enterprise (including 64-bit editions) with Service Pack 2</li> <li>Windows 7</li> </ul> </li> <li>512MB of RAM (1GB recommended)</li> </ul>
Macintosh	



Operating System	Requirements
	<ul> <li>Intel Core™ Duo or faster processor</li> <li>Macintosh OS X v10.6 or later</li> <li>512MB of RAM (1GB recommended)</li> </ul>

## **Installing Playlist**

The following installation instructions are for Windows operating systems. The installation procedure for Macintosh OS X might vary slightly.



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

- 1. Open the Flexapps folder located in HarmonicTemplatesAndTools-v8.3.0.0-SWandDoc.exe.
- 2. Double-click the Playlist installer, **PolarisPlayPlaylist.air**. The installation dialog opens.
- 3. Choose an installation location, and then click **Continue** to complete the installation.

## Connecting to Scheduler

You can access Scheduler from the Harmonic landing page using a client computer with one of the following operating systems and web browsers:

Windows or Linux	Macintosh
<ul> <li>Internet Explorer* 10 or newer</li> <li>Mozilla Firefox* (latest)</li> <li>Google Chrome* (latest)</li> </ul>	Safari 6 or newer

To connect to Scheduler:

- 1. Open your web browser, and then type the IP address of your Spectrum video server in the address bar.
- 2. Log in using the following credentials:

username: user password: user

The Harmonic landing page displays.



3. Click the button for Scheduler to access the application.

Harmonic recommends that you change your password after logging in.



# **Configuration Guidelines**

## Spectrum X (MIP-9000 series) Configuration Guidelines

## **About UHD Support**

#### **UHD Playout**

Spectrum supports playout of one channel of UHD on a Spectrum X with the following media and wrapper format:

- XAVC Class 300 with the MXF OP1a wrapper
- AVC-Ultra Class 300 with the MXF OP1a wrapper

#### **UHD Record**

This release supports record of one channel of UHD on a Spectrum X with the following media and wrapper format:

XAVC Class 300 with the MXF OP1a wrapper



#### Note

If you want to record AVC-Ultra Class 300, contact your Harmonic representative for assistance .

In *shared storage mode*, UHD Record with Spectrum X is supported when connected to MediaCenter 2200B or MediaDirector 2252B-DS/2252B/2251B.



#### **Important**

Because storage bandwidth is limited in internal storage mode, Harmonic recommends the Spectrum X be in shared storage mode when playing out or recording UHD. However, for some thematic channel usage where the content is rarely changing, the Spectrum X may be used in internal storage mode when playing or recording UHD. Contact your Harmonic representative to discuss your specific workflow.



#### Note



UHD support is limited to SDI record and play at this time .

#### About 3G Support

For 3G records with I-Frame formats:

- In *internal storage* mode, Spectrum X supports two channels.
- In *shared storage* mode, Spectrum X supports four channels.

For 3G play with I-Frame and Long GOP formats:

- In *internal storage* mode, Harmonic recommends two channels. However, for some thematic channel usage, where the content is rarely changing, the Spectrum X may support up to four 3G AVCI playback channels. Contact your Harmonic representative to discuss your specific workflow.
- In *shared storage* mode, Spectrum X supports four channels.

Spectrum X does not support 3G AVC Long GOP record at this time.



#### Note

If your Spectrum X channel requirements are not specified by the cases described in this section, contact your Harmonic Systems Engineer prior to ordering the equipment. Harmonic will perform an analysis based on your requested operational parameters and will either approve the configuration as requested or specify the changes required to bring the system into compliance with Spectrum X system specifications.



## About HD/SD Support

Spectrum X in *internal storage* mode supports up to four channels of record or play at 100 Mbps or less in any combination of codec, wrapper, track count, and active transfer with the exception of MPEG-2 Long GOP and AVC Long GOP.

- For MPEG Long GOP above 50 Mbps, there are no restrictions for self-contained wrappers. If you use reference formats, contact your Harmonic representative.
- For AVC Long GOP, Spectrum X supports two channels of record.

Spectrum X in *shared storage* mode supports up to four channels of record or play at 200 Mbps or less in any combination of codec, wrapper, track count, and active transfer. For AVC Long GOP, Spectrum X supports two channels of record.

## Watch Folder Support

When you add an LXF watch folder, to improve performance, SystemManager automatically configures the Network/File System Performance settings as follows:

- Low Priority Bandwidth Limit (FTP & SAMBA): Default setting (100 MB/s)
- Low+ Priority Bandwidth Limit (AFP): 100 MB/s

For 50 Mbps material, Spectrum supports *one* LXF import with a re-wrap speed no higher than 3x. For 100 Mbps or 150 Mbps LXF material, the re-wrap speed must be set no higher than 1x.

At this time, Spectrum supports two watch folders per Spectrum video server. These watch folders may use different source types (.ts, .ps, or LXF) or two of the same source type.

## **About Transport Stream Ingest Support**

With a Spectrum X in internal storage mode, Spectrum supports transport stream ingest with four compressed stream players at one time.

Transport stream ingest is not supported on a Spectrum X in shared storage mode or while SDI players are activated on the Spectrum X.



#### Note

If you have questions regarding your transport stream ingest workflow, please contact your Harmonic representative



## About SMPTE 2022-6 Support

With this release, a Spectrum X in 2022-6 mode can either output 2022-6 streams or input 2022-6 streams at one time but cannot do both at the same time.

Spectrum X in 2022-6 mode supports two live inputs and playout of four streams at one time.

For encode of 2022-6 streams, one Spectrum X supports:

- One encode of XDCAM 50 LGOP at a time
- Up to two encodes of Intra frame formats at a time

Note that when using both primary and secondary outputs, both outputs must share the same format.

Note that when the Spectrum X is in 2022-6 mode, it is also in Standard Channel mode. In this release, Enhanced Channel and Ultra mode are not supported while in 2022-6 mode.



#### Note

If you have questions regarding your SMPTE 2022-6 workflow, please contact your Harmonic representative.

## About Previewing Clips from Harmonic MediaGrid or NAS

In order to use Spectrum X to preview clips from Harmonic MediaGrid or NAS, the Spectrum X must set to "diskless" mode as described in "Setting the Spectrum X to 'diskless' mode" in the *Spectrum System Installation Guide.* In addition, the FW-MIP-9000-NAS-MOUNT and FW-MIP-9000-MDM licenses must be installed.



#### **Important**

Players configured to preview material from a Harmonic MediaGrid or NAS are intended for Preview only and are not for on-air usage.



#### Note

If you have questions regarding preview of clips from Harmonic MediaGrid or NAS, please contact your Harmonic representative.



## MediaDirector Configuration Guidelines

#### MediaDirector 2252B-DS

One Spectrum MediaDirector 2252B-DS supports up to 36 channels of video record and play at a bit rate of 200 Mbps.

One MediaDirector 2252B-DS supports up to five concurrent edit seats (this requires a minimum of six RAID sets). If you are using 3G material or wish to add edit seats, contact your Harmonic representative to identify the supported number of edit seats.

For one MediaDirector 2252B-DS, 12 UHD channels are supported. To properly size your system when using UHD, contact your Harmonic representative for configuration guidelines.



#### Note

If you plan to transfer material using the Media API at the same time as transfers with the FTP, AFP, or SMB protocol, contact your Harmonic representative for configuration guidelines.

#### About EFS with Four MediaDirector 2252B-DS Series

Spectrum supports an EFS configuration with four MediaDirector 2252B-DS connected to a maximum of six MediaStore 5100/5000 series. In this configuration, Spectrum supports up to 144 channels of HD material. If using UHD or 3G in a four-MediaDirector EFS configuration, contact your Harmonic representative for configuration guidelines.



#### Note

If your MediaDirector 2252B-DS channel requirements fall outside these operating points, contact your Harmonic Systems Engineer before ordering the equipment. Harmonic will perform an analysis based on your requested operational parameters and project timeline and will either approve the configuration as requested or specify the changes required to bring the system into compliance with MediaDirector 2252B-DS system specifications.

## MediaDirector 2252B

Spectrum MediaDirector 2252B supports up to 24 channels of video record and play at a bit rate of 100 Mbps, and supports up to 12 channels of 3G AVC-Intra (1080P 50/60). The MediaDirector 2252B supports up to four channels of XAVC-Intra UHD. If your MediaDirector 2252B channel requirements fall outside these operating



points, contact your Harmonic Systems Engineer before ordering the equipment. Harmonic will perform an analysis based on your requested operational parameters and project timeline and will either approve the configuration as requested or specify the changes required to bring the system into compliance with MediaDirector 2252B system specifications.

The MediaDirector 2252B supports up to five concurrent edit seats with HD material (this requires a minimum of six RAID sets). If you are using 3G material, contact your Harmonic representative to identify the supported number of edit seats.

### MediaDirector 2251B

Spectrum MediaDirector 2251B supports up to 12 channels of video record and play at a bit rate of 100 Mbps, and supports up to 6 channels at 200 Mbps (3G AVC-Intra formats). The MediaDirector 2251B supports 2 channels of XAVC-Intra UHD.

The MediaDirector 2251B supports up to five concurrent edit seats with HD material (this requires a minimum of six RAID sets). If you are using 3G material, contact Harmonic your representative to identify the supported number of edit seats.

### MediaDirector 2252/2251

The MediaDirectors 2252/2251 support up to two concurrent edit seats, and no more than 24 active transfers.



#### Note

Attempting to use more than two edit seats simultaneously on an active MediaDirector 2252/2251 may result in a "Dropped Frame" warning in the editor if frames are dropped.

#### MediaDirector 2252

Spectrum MediaDirector 2252 supports up to 24 channels of video record and play at a bitrate of 50 Mbps; however, the following limitations are present in the Spectrum software release:

A maximum of 16 channels if exclusively ingesting QuickTime-wrapped content with proxy

For 3G I-frame, six channels of record or play are supported.

If your MediaDirector 2252 channel requirements include the condition discussed above, contact your Harmonic Systems Engineer before ordering the equipment. Harmonic will perform an analysis based on your requested operational parameters and project timeline and will either approve the configuration as requested or specify the changes required to bring the system into compliance with MediaDirector 2252 system specifications.



#### MediaDirector 2251

Spectrum MediaDirector 2251 supports up to 12 channels of video record and play at a bitrate of 50 Mbps. For 3G I-frame, three channels of record or play are supported.

## Watch Folder Support

When you add an LXF watch folder, to improve performance, SystemManager automatically configures the Network/File System Performance settings as follows:

- Low Priority Bandwidth Limit (FTP & SAMBA): 300 MB/s
- Low+ Priority Bandwidth Limit (AFP): 200 MB/s

For 50 Mbps material, Spectrum supports *two* LXF imports with a re-wrap speed no higher than 3x. For 100 Mbps or 150 Mbps LXF material, the re-wrap speed must be set no higher than 1x.

At this time, Spectrum supports two watch folders per Spectrum video server. These watch folders may use different source types (.ts, .ps, or LXF) or two of the same source type.



## MediaCenter Configuration Guidelines

## MediaCenter 2200B and 2200B-DS

The MediaCenter 2200B supports 20 channels of record or play at 50 Mbps or less, or 10 channels of record or play at 51-100 Mbps. This is supported for any combination of codec and wrapper. For 3G I-frame, 6 channels of record or play are supported. The MediaCenter 2200B also supports two channels of XAVC-Intra UHD playout.

When using Active Transfer for all channels, the following guidelines apply:

- Up to 20 channels of record or play at 50 Mbps
- Up to 10 channels of record or play at 100 Mbps
- Up to 6 channels of record and play at 3G I-frame

The MediaCenter 2200B supports two concurrent edit seats.

Note the following guidelines for a MediaCenter with MediaStore 7224 (24 drives) or MediaStore 7212 (12 drives)

#### **Maximum Channel Count**

Raster	Bit Rate (Mbps)	Internal storage (# of channels)	12 Drive MSS (# of channels)	24 Drive MSS (# of channels)
1.5G HD	50	20	20	20
3G HD	100	12	20	20
	200	6	12	12
UHD	500	2	3	4
	600	2	3	4
	900	1*	2*	2*

<sup>\*</sup>See Spectrum Release 8.3 Spectrum X Configuration Guidelines for guidelines and recommendations.

#### **Edit Seats**

Raster	Internal storage	12 Drive MSS	24 Drive MSS
	(# of channels)	(# of channels)	(# of channels)
1.5G HD	2	3	4



Raster	Internal storage (# of channels)	12 Drive MSS (# of channels)	24 Drive MSS (# of channels)
3G HD	1	2	2
UHD	1*	1*	1*

<sup>\*</sup>Edit in place is supported with Macintosh with Final Cut Pro and Adobe Premiere.

If your MediaCenter 2200B channel requirements fall outside the these operating points, contact your Harmonic Systems Engineer before ordering the equipment. Harmonic will perform an analysis based on your requested operational parameters and project timeline and will either approve the configuration as requested or specify the changes required to bring the system into compliance with MediaCenter 2200B system specifications.

### MCP-2200 MediaCenter

The MCP-2200 MediaCenter supports 12 channels of record or play at 50 Mbps or less, or six channels of record or play at 51-100 Mbps. This is supported for any combination of codec, wrapper and proxy. For 3G I-frame, three channels of record or play are supported.

When using EIP on a MediaCenter with hard disk drives, the following configuration is supported:

- EIP is not supported for reference-type wrappers
- 12 active transfers OR two seats of EIP with 50 Mbps media or lower
- EIP with > 50 Mbps media is not supported
- · Audio limit of eight channels in no more than eight files

When using EIP on a MediaCenter with solid-state drives, the following configuration is supported:

- 12 active transfers
- Two seats of EIP with 100 Mbps media or lower
- Audio limit of 16 channels, in up to 16 files

## MCP-2200A MediaCenter

The MCP-2200A MediaCenter supports 20 channels of record or play at 50 Mbps or less, or ten channels of record or play at 51-100 Mbps. This is supported for any combination of codec, wrapper and proxy. For 3G I-frame, four channels of record or play are supported.

When using Active Transfer for all channels, the following guidelines apply:

- Up to 20 channels record or play at 50 Mbps, without proxy
- Up to 10 channels record or play at 100 Mbps, with or without proxy
- Up to 14 channels of record with proxy at 50 Mbps



When using EIP on a MCP-2200A MediaCenter, the following configuration is supported in combination with up to 14 channels of record or play (including proxy):

- Two seats of EIP with Quicktime Self-wrapped clips at 100 Mbps media or lower, no Active Transfer
- One seat of EIP with Quicktime Reference-wrapped clips at 100 Mbps media or lower, no Active Transfer
- One seat of EIP with MXF Self-wrapped clips at 100 Mbps media or lower, no Active Transfer

## Watch Folder Support

When you add an LXF watch folder, to improve performance, SystemManager automatically configures the Network/File System Performance settings as follows:

- Low Priority Bandwidth Limit (FTP & SAMBA): Default setting (185 MB/s)
- Low+ Priority Bandwidth Limit (AFP): 200 MB/s

For 50 Mbps material, Spectrum supports *two* LXF imports with a re-wrap speed no higher than 3x. For 100 Mbps or 150 Mbps LXF material, the re-wrap speed must be set no higher than 1x.

At this time, Spectrum supports two watch folders per Spectrum video server. These watch folders may use different source types (.ts, .ps, or LXF) or two of the same source type.

## MediaDeck 7000 Configuration Guidelines

MediaDeck 7000 supports up to four channels of video record or play with embedded audio. Some combinations of bit rate, codec, wrapper, and track count may not be supported due to performance limitations. This section discusses these limits and the process for properly provisioning high-bit rate systems.

## MediaDeck 7000 with Integrated SATA HDD Storage

The system supports four channels of record or play at 50 Mbps, or less, in any combination of codec, wrapper, track count, proxy, and active transfer. As long as the bit rate is at or below 50 Mbps on every channel, any combination of the above elements is supported.

With the exception of MPEG-2, the system supports four channels of record or play at 100 Mbps, or less, in any combination of codec, wrapper, track count, proxy, and active transfer. With the exception of MPEG-2, as long as the bit rate is at or below 100 Mbps on every channel, any combination of the above elements is supported.

Above 50 and up to 85 Mbps, only certain combinations of play and record are supported for MPEG-2:

- Four play channels with active transfer, without restriction
- Four record channels with proxy and active transfer, self-contained formats only
- Four channels mixed play and record (1+3, 2+2, 3+1) are restricted to self-contained wrappers without proxy, and without play-while-record.



Regardless of bit rate and wrapper type, no more than two channels may be playing offspeed (that is, other than normal 1x forward) simultaneously.

If your MediaDeck 7000 channel requirements are not specified by the cases described above, contact your Harmonic Systems Engineer, prior to ordering the equipment. Harmonic will perform an analysis based on your requested operational parameters and will either approve the configuration as requested or specify the changes required to bring the system into compliance with MediaDeck 7000 system specifications.

## MediaDeck 7000 with Integrated SSD Storage

In addition to one seat of EIP, MediaDeck 7000 SSD high-performance solid-state drives support the following numbers of channels of video record or play up to the bitrates noted, without restrictions:

- Four channels with 100 Mbps content
- Three channels with 120 Mbps content
- Two channels with 145 Mbps content

## Watch Folder Support

When you add an LXF watch folder, to improve performance, SystemManager automatically configures the Network/File System Performance settings as follows:

- Low Priority Bandwidth Limit (FTP & SAMBA): Default setting (100 MB/s)
- Low+ Priority Bandwidth Limit (AFP): 100 MB/s

For 50 Mbps material, Spectrum supports *one* LXF import with a re-wrap speed no higher than 3x. For 100 Mbps or 150 Mbps LXF material, the re-wrap speed must be set no higher than 1x.

At this time, Spectrum supports two watch folders per Spectrum video server. These watch folders may use different source types (.ts, .ps, or LXF) or two of the same source type.



### Spectrum Management

Spectrum Management runs directly on a Spectrum X in internal storage configuration and a MediaDeck 7000, and allows you to configure, monitor, and maintain your Spectrum video server without SystemManager.

### Accessing Spectrum Management

Spectrum Management can be accessed from a client system with one of the following operating systems and web browsers.

On a Windows\* Desktop Platform or Linux Computer:

- Internet Explorer 9 or newer
- Mozilla Firefox (latest)
- Google Chrome (latest)

On a Macintosh\* Computer:

Safari 6 or newer

To access Spectrum Management:

- 1. Make sure you have connected a client computer to your Ethernet network as described in "Connecting your Gigabit Ethernet Network" in the *Spectrum System Installation Guide*.
- 2. For *Spectrum X*, follow the steps in the following procedure, "Using Monitor.exe to Identify or Set the Spectrum X IP Address," to identify your IP address.
  - For *MediaDeck 7000*, use the port status display on the front panel of the MediaDeck to identify the IP address of a MediaPort or ChannelPort module installed in your MediaDeck 7000. For details, see "Port Status Display" in the *Spectrum System Installation Guide*.
- 3. Open a web browser on your client computer, and then type the Spectrum video server IP address in the address bar to open the Spectrum Management interface.
- 4. Log in using one of the following accounts:
- **User Account**: The "user" account allows you to only view configurations for your Spectrum video server, wink devices, and create schedules using Polaris Play: Scheduler.
  - User name: userPassword: user
- Admin Account: The "admin" account allows you to perform all supported Spectrum video server configuration. The administrator log in is as follows:
  - User name: adminPassword: omneon



# Using Monitor.exe to Identify or Set the Spectrum X IP Address

You can use monitor.exe to identify the IP address of a Spectrum X that has been assigned one by DHCP, or to assign a static IP address to the Spectrum video server.

### Before you begin:

- Make sure your Spectrum X and your client system are on the same subnet.
- Consult with your network administrator before setting or changing the Spectrum video server IP address.
- 1. Download monitor.exe from the pcapps folder in the Spectrum-v< *version#*>-Software.exe file and save it to your client system.
- 2. Double-click monitor.exe to open it.
- 3. From the main window, click **View > Serial Number** to open the Director List. A list of all Spectrum video servers appears.
- 4. For Spectrum X, the serial number will appear as D13\_nnnnn. The first 5 n's make up the 5-digit unit ID, which electronically identifies the unit. If your Spectrum video server has been assigned an IP address by DHCP, the IP address will appear in this list. Use this IP address to access Spectrum Management as described in the previous procedure.
  - If you wish to assign a static IP address to your Spectrum video server, continue to the next step.
- 5. Right-click on the entry for the Spectrum video server you wish to change, and then select **Set IP** address to open the Set IP address dialog.
- 6. From the Set IP address dialog, click the **Static IP** check box and, and fill in the following required fields: **Address**, **Net Mask**, and **Gateway**.



7. Click **OK**, and then verify that the new IP address appears in the Director list.



### **Changing Your Password**

To change the log in password:

- 1. Click the profile icon in the upper right-hand corner of the Spectrum Management window, and then select **Change Password**.
- 2. From the Change Password dialog box, in the **Old Password** field, enter the current password, and then enter the new password in the **New Password** and **Confirm Password** fields
- 3. Click OK.

### Supported Spectrum Functionality

With this release, Spectrum Management supports most Spectrum functionality. Note the following limitations:

- Spectrum Management does not support Audio Watermarking at this time.
- Spectrum Management does not support RouteTable configuration at this time.
- Spectrum Management allows you to manage only the Spectrum X or MediaDeck 7000 on which it's running, and no other Spectrum devices in your network.
- Players created using Spectrum Management can be viewed in a read-only mode using SystemManager. However, they cannot be modified, activated/de-activated, or deleted using SystemManager.
- Spectrum Management does not provide support for track tags.



### **Known Issues**

The following tables detail significant known issues for this release.

- Known Issues Related to Spectrum X
- Known Issues Related to the Spectrum Video Server
- Known Issues Related to ChannelPort and MediaPort 7000
- Known Issues Related to Polaris Play
- Known Issues Related to Spectrum Management
- Known Issues Related to Player or File Type
- Known Issues Related to the Media API
- Known Issues Related to MediaTools (Applications)
- Known Issues Related to Third Party Equipment and Material

### Known Issues Related to Spectrum X

ss" mode, in some cases, when the Spectrum X is mounted to a S file system, the config.dir subfolder is not created automatically sult, errors such as the following may appear:  a audiopiped: AudioPiped::Init:Ch 0.A.0: 60000ms timeout rer
ate a config.dir subfolder in the root directory of your file system Im X. (VSG-15586)
watermarking is enabled on a Spectrum X channel, an error ing may appear in the Spectrum log:
audiopiped: AudioQueueShared::Lock failed to lock: errno:110 Connection timed out
gignored. (VSG-15607)
ed to a Harmonic MediaGrid system, Spectrum generates log ic MediaGrid FSD, such as the following:



Synopsis	Description
Harmonic MediaGrid	07/12 09:22:29 W kernel omfs: [09178]:4294769.447:L3 Loaded Omneon Linux FSD 3.5.0 .0 Wed Jul 12 12:18:02 UTC 2017 for kernel 3.10.104 07/12 09:22:29 W kernel omfs: [09229]:4294769.448:L3 pre-alloc done in 1ms 07/12 09:22:29 W kernel omfs: [09436]:4294769.787:L3 Connecting to MDS 10.10.131.5  07/12 09:22:29 W kernel omfs: [09436]:4294769.791:L3 ClusterUid is AA90D6F929DD99E4 07/12 09:22:29 W kernel omfs: [09436]:4294769.791:L3 using MDS 10.10.131.5 protocol version=3.2 sess id=411f7d81  These are informational messages and can be safely ignored. (VSG-15203)
Change player state after applying licensed features	If you apply licensed feature changes to a channel (including graphics layer count, MCS, or DVE) with an active player attached to it, if the player is also connected to tools such as FXTool, PreviewTool, Playlist, or Scheduler, those tools will not reflect the new channel state until the player is deactivated and then activated again. For details on enabling licensed features for a channel, see the "Master Control Switcher Configuration" section of the <i>Harmonic SystemManager User Guide</i> . For details on changing the player state, see "Changing the player state" in the same guide.
Follow UHD template guidelines	When using full-size UHD .mp4 graphic templates, the Spectrum X may be unable to render the graphics frame accurately. If this occurs, try using a lower frame rate, or lower the quality setting during encode. For details, see "Guidelines for authoring UHD templates" in the Spectrum Template User Guide. (VSG-14543)
Some units do not share reference across two SDI cards.	Some initial Spectrum X units do not have the internal cable that allows two SDI cards to share the reference signal. For these units, reference must be connected to each SDI card. If you are unsure whether your Spectrum X can share reference across SDI cards, follow the steps in Verify "MSX" Cable Before Using Spectrum X for UHD Playout. (VSG-13736)
Issue with offspeed play	Using the Spectrum X to do offspeed play between -1.5 and 1.5 may result in the video appearing to stutter, and in Spectrum reporting error messages such as the following. (VSG-14034)  D main p0Tap8P206-1:deny obuf(#ff+#req=481+0/18>8*fps=480) for f246543I /t246903/s511024:18/n3/r0/in/mty/18of18/gi:71,rl:0,rr:0,fs:0,pm:0,dur:93"
Player type and EE Mode selections for	When configuring a player for the Spectrum X, use only the following combinations of <b>Player Type</b> and <b>EE Mode</b> settings to achieve the lowest latency when the player switches states. (VSG-13478, VSG-14275)



Synopsis	Description					
lowest	For this Spectrum X player	Select these Player Type and EE Mode options				
	Play-only player with or without branding (including UHD players)	<ul> <li>Player Type: Branded</li> <li>EE Mode: Never (preset with Branded players)</li> </ul>				
	Record-only player	<ul> <li>Player Type: Record</li> <li>EE Mode: Never (for lowest latency)</li> <li>EE Mode: Normal</li> </ul>				
	UHD Record player	• EE Mode: Normal				
	Play and Record player	<ul><li>Player Type: Hybrid</li><li>EE Mode: Never</li></ul>				
Front panel LED colors	For the Spectrum X front panel LEDs, the light blue state as described in the documentation may appear greenish on the actual LED.					
Cannot wink drives	For a Spectrum X in internal storage configuration, the drives do not support winking. To identify drives using SystemManager, look at the <b>Slot</b> value on the <b>Storage Properties</b> page, or the <b>MediaStore Slot Number</b> on the <b>Drive Properties</b> page. Drives are numbered 1-4 from left to right when facing the front panel.					
Switching between external key /fill input pairs	For a Spectrum X in enhanced channel mode, when switching between one pair of external key/fill inputs to another pair of external key/fill inputs, the second input pair appears visible one reference frame too early as compared to ChannelPort. (VSG-13549)					
Issue with clip playback						



Synopsis	Description
following a record on the same player	After recording an AVCI clip, playing it back on the same player may result in an error. As a workaround, eject the clip and load it again before attempting to play on the same player on which it was recorded. (VSG-12420, VSG-14023)

### Known Issues Related to the Spectrum Video Server

These issues may apply to MediaDirector 2252B/2251B and 2252/2251, MediaCenter 2200B, 2200A, 2200, MediaDeck 7000, and Spectrum X in internal storage mode.

Synopsis	Description
Error messages during drive firmware upgrade	When updating drive firmware for a Spectrum video server, Spectrum may display "Cannot write to dead disk" error messages. These messages can be safely ignored. (VSG-14243)
Deprecated user ID in Samba config	Spectrum includes a deprecated user ID in the Samba config file for user: omneon. To remove this user ID from Samba:  1. Start an SSH session into your Spectrum video server.  2. Run "smbpasswd -x omneon"  3. Enter "vi /etc/ssmba/smbpasswd" and remove the user line for omneon.  4. Enter "wb /etc/ssmba/smbpasswd."  5. Enter "/etc/init.d/S91smb restart" to restart the Spectrum video server.  If you wish to use the omneon user ID, Harmonic recommends that you change the password as follows:  1. Start an SSH session into your Spectrum video server.  2. Run "passwd omneon" and enter the new password.  3. Enter "wb /etc/passwd."  4. Enter "wb /etc/shadow."  (VSG-14162)
Error messages when powering down	In some cases, when the Spectrum video server is powering down, error messages such as the following may appear in the logs:  E main E(BufferedIO.Filesystem Error): <> (mkdir[rwbuffermqx.cc:3215])



Synopsis	Description				
	These error messages can be safely ignored. (VSG-13959)				
Issue with active transfers to	In some cases, active transfers from a Spectrum video server to Harmonic MediaGrid may fail and generate errors such as the following:				
Harmonic MediaGrid	E main E(MediaCopier.Unknown error): addSamples failed @f=1138262 (frameSetup [defaultcopierloop.cc:755])				
	If this occurs, contact Harmonic Technical Support for assistance. (VSG-10098)				
Front panel LED colors	On the front panel LEDs, the light blue state as described in the documentation may appear greenish on the actual LED. For some early models of the MediaDirector 2251B/2252B and MediaCenter 2200B, the yellow state of the RAID set indicator may be affected by the color of adjacent LEDs and not appear completely yellow. (VSG-13857)				
Drive status during rebuild	During a drive rebuild, if the rebuild is suspended, the software may not show the correct rebuild status. (VSG-13641)				
MediaDeck 7000 issue with Play while Record	On a MediaDeck 7000 series, doing Play while Record of MPEG-2 Long GOP, 50 Mbps I-frame, material with the QuickTime wrapper and multiple players could result in error messages that indicate "sendQ too small," and playout could be disrupted. (VSG-12770)				
No LED states for boot drive	The boot drive LED on the rear of the MediaDirector 2252B/2251B and MediaCenter 2200B chassis does not display any meaningful states. (VSG-13343)				
Issue with drive rebuild after EFS cables disconnected	For MediaDirectors in an EFS configuration, if a drive rebuild is occurring on one MediaDirector and EFS cables are disconnected then reconnected to that MediaDirector, the drive rebuild will fail to restart. As a workaround, restart the MediaDirector that was performing the rebuild. The rebuild will continue on another MediaDirector in the EFS. (VSG-12509)				
Watch folder deleted when updated with invalid path	If you attempt to update an existing watch folder entry using an invalid path for the destination folder, Spectrum deletes the existing watch folder and does not create the new one. As a workaround, make sure to use a valid path for the destination folder. To be valid, the path must be complete. For example:  Invalid: /watch_folder  Valid: /fs0/watch_folder (VSG-12136)				
Issue with initiating 16 or more FTP transfers too	On the MediaDirector, initiating 16 or more file transfers via FTP with each transfer initiated in less than two seconds of the other could result in general system disruptions (for				



Synopsis	Description
quickly on MediaDirector	example, loss of connectivity or disruption of encodes or decodes). As a workaround, stagger the initiation of your FTP file transfers by at least 2-4 seconds. (VSG-12584, VSG-12850)
Issue with encoding 10 or more hours of QuickTime or MXF self- contained to MediaCenter	On the MediaCenter, encodes of QuickTime or MXF self-contained files greater than 10 hours in duration can run the system out of memory. As a workaround, avoid encodes of those formats exceeding 10 hours. If the system runs out of memory, restart the MediaCenter. (VSG-11904, VSG-11883)
Issue when joining Active Directory domain with invalid credentials	In some cases, joining a Windows 2008 Active Directory domain with invalid credentials will incorrectly report as a success. (VSG-11231)
Restart issue with MediaDirector 2252/2251 series	In rare cases, when restarting a MediaDirector 2252/2251 series, the MediaDirector does not restart as expected. Instead, it appears powered down but does not respond to front or rear panel power buttons. As a workaround, remove the power source, wait 30 seconds, and then power on the system. (VSG-11172)
FTP transfers from MediaDirector to MediaGrid need custom timeouts for open and status requests	For help setting custom timeouts for open and status requests for FTP transfers from a Spectrum Video Server to the Harmonic MediaGrid, contact Harmonic Technical Support. (VSG-9131)
Multiple monitoring sessions on the same server may not	When connecting to one Spectrum video server with two separate Monitor or MXQ Monitor sessions and logging data for an overlapping time window, some messages may appear in one log and not in the other. (VSG-8407)



Synopsis	Description
show the same log messages	
MediaDirectors sharing a file system must run same firmware versions	Since Release 6.3.0.0, MediaDirectors on an EFS need to run the same firmware revision or risk file system corruption. To avoid corruption when upgrading MediaDirectors on an EFS, first stop the file system on all MediaDirectors, then upgrade all MediaDirectors at the same time. Once upgrades are complete on all MediaDirectors, restart the file system on each MediaDirector. (VID-5691)
Erroneous messages in the MediaDirector and MediaCenter logs about Harmonic MediaGrid file deletions	When performing FTP-based active transfers on a MediaDirector or MediaCenter, there may be warning/error messages in the logs indicating that a file on the Harmonic MediaGrid could not be deleted. The file does get deleted; the messages should be ignored. (VID-5037, VSG-4593)
Timecode from a Spectrum server overrides VITC from the I/O module	If a LTC timecode source is connected to a MediaCenter or MediaDirector, the MediaCenter or MediaDirector automatically uses that as the timecode source for any attached player. This overrides the reference VITC from the I/O module (for example, MediaPort) for purposes of automation. However, if the attached player is configured with a different frame rate than that of the LTC input, then its reference will not be overridden. For example, a LTC input with a frame rate of 25 Hz will not override the reference for a player configured with a frame rate of 29.97 Hz. (VID-3432)
Use MediaPort Ethernet Array for I/O modules only	Do not attempt to use the MediaPort Ethernet Array interfaces on a MediaDirector or MediaCenter for any purpose other than I/O module connectivity. Connecting these interfaces to a public network may cause network disruptions. (VID-5114, VSG-4661)
MirrorTool and TransferTool are not supported	Harmonic does not support the use of MirrorTool or TransferTool on the MediaDirector, MediaCenter, or Spectrum X. As an alternative, use the ProXplore™ transfer management application provided with the Media Application Server (MAS).
Update firmware	Harmonic recommends that you upgrade your Spectrum MediaDeck 7000 to firmware version 8.2.0.0 before you install a ChannelPort module running firmware version 8.2.0.0. If



Synopsis	Description
before installing a ChannelPort module in MediaDeck 7000	you install a ChannelPort in a MediaDeck 7000 running an earlier version, the ChannelPort may not start. Follow the instructions in "Spectrum Firmware Upgrades" in the <i>Spectrum System Installation Guide</i> to update your MediaDeck firmware.
Issue with serial over LAN to MediaCenter 2200/2200A	In some cases, attempting to connect to the MediaCenter 2200 or 2200A via serial over LAN connection may result in the MediaCenter appearing to be unresponsive for an extended period of time. As a workaround, if direct access to the system is possible, you may connect using the VGA connector. (VSG-7871)
Quicktime proxy encodes can run the system out of memory.	Quicktime proxy encodes greater than 6 hours can run the system out of memory.  Workaround: Avoid Quicktime proxy encodes of more than 6 hours. If the system runs out of memory, reboot MediaDirector. (VSG-11904)

### Known Issues Related to ChannelPort and MediaPort 7000

Synopsis	Description
Change to license structure	Due to changes in the license structure, ChannelPort licenses issued for releases 7.0 and 7.1 will not have full graphics capabilities when used with the current release. To correct this problem, contact Harmonic Technical Support to request a new ChannelPort license key.
Upgrade may cause Enhanced Channel mode to be set incorrectly	In rare cases, upgrading a ChannelPort to 7.5 or later may cause the ChannelPort to be set to Enhanced Channel mode incorrectly. For assistance, contact Harmonic Technical Support. (VSG-11342)
PreviewTool sometimes fails to refresh clip and template inventory when switching between multiple connections	If you have multiple connections configured with PreviewTool, and you rapidly switch between the connections, PreviewTool may appear to get "stuck" on a connection.  If this happens, the clip and template inventory lists will be empty, and the refresh button will be red, indicating an error in fetching inventory. Clicking the Refresh button will fail without refreshing the inventory.  Workaround: When changing connections, wait for a connection to complete refreshing its inventory before switching to the other connection. If PreviewTool appears to be



Synopsis	Description							
	"stuck" on a connection, switch to a different connection and wait for the inventory to refresh. (VSG-7322)							
The ChannelPort Module QRG rev B contains incorrect information in the	Rev B states	<b>S</b> :						
	Function	RX (-/+)	TX (-/+)					
	Serial 1	2-3	10-11					
GPIO/RS-422 Signals table	Serial 2	4-5	12-13					
Signals table	Serial 3	6-7	14-15					
	Serial 4	8-9	16-17					
	Ground	1						
	The correcte	ed Rev C sta	ites:					
	Function	RX (-/+)	TX (-/+)					
	Serial 0	2-3	10-11					
	Serial 1	6-7	14-15					
	Serial 2	4-5	12-13					
	Serial 3	8-9	16-17					
	Ground	1						
PreviewTool /FXTool cannot load files named with certain characters		preview in I	s should not b PreviewTool o			ng files o	r when crea	ating
Do not use the highest layer for graphics (4 or 8, depending upon	highest grap	hics layer (4 phics. If you	configured to for 8, depend r ChannelPor raphics.	ling upon	license) t	o ensure	they are no	ot obscur



Synopsis	Description
license) if also using an Emergency Alert System (EAS).	
SDI audio configuration issues cause phase shifts in audio samples	When devices that are connected to the SDI input of the ChannelPort do not have the same number of audio groups configured for embedded SDI audio as the ChannelPort, small phase shifts in audio samples may occur.  Workaround: Ensure all devices that are connected to the SDI input of the ChannelPort have the same number of audio groups configured for SDI audio. (VSG-7589, VSG-7767)
PreviewTool default setting of 0.01 second duration results in offset from	PreviewTool allows layer settings that may not make sense for every combination of primary and secondary events. For example, certain values for "offset from start" and "offset from end" may be valid for some primary and secondary events, but for others, it may result in a secondary event that ends before it starts. Similarly, a secondary duration may be too small to express in frames for the channel's frame rate.
end, not short duration clip	When you drag a template onto the sequence timeline, if PreviewTool detects that the default settings for that layer result in meaningless start or end times for that secondary event, it will ignore the layer defaults and create a secondary event that spans the full available time.
	Workaround: Make sure the layer default configuration is compatible with the primary and secondary events being used in your workflow. When a primary duration causes the first dragged secondary for a layer to occupy an interval other than the configured default when the configured default is impossible for the primary duration, edit the secondary offset(s) and/or duration to acceptable values. (VSG-7424)
Issue with the front panel display on a MediaPort 7000 chassis during power cycling	When a single module is installed in a MediaPort 7000 series chassis, rebooting the module will cause the LCD and light bar on the front panel to go dark. When the module has rebooted, the LCD will resume its normal behavior/output. If two modules are installed, and both are rebooted simultaneously, the LCD on the front panel will go dark. The LCD will resume normal behavior when either module has restarted. If two modules are installed, the front panel LCD will continue to operate normally as long as one of the modules is online. (VID-4629, VSG-4233)
Toggling off- speed play may result in audio artifacts	In some cases, when playing back MXF material on an I/O module, changing the speed to an off-speed setting (for example, -2x, 2x, or 3x), playing the content, and then changing the speed back to 0, or pausing, may result in audio artifacts, which last less than a second in duration. (VID-3206)



Synopsis	Description
VITC issue under certain off-speed play conditions	VITC timecode from the I/O module does not display current time on media in reverse mode or on jumping to an arbitrary still frame. This does not affect VITC output via BVW protocol or the Spectrum Player API.
Connect Reference for I/O modules	When using a Spectrum server, external reference must be connected when using an I/O module (for example, MediaPort) for playout, but is not required with I/O modules used for record. For additional information regarding MediaPort timing and the MediaDirector, refer to "About MediaPort Timing" in the <i>Spectrum System Installation Guide</i> .
Issue playing proxy clips from a MediaPort 7000 series	When playing proxy clips created by a MediaPort 7000 series on a QuickTime Player, a green screen may be displayed. Upgrade to the latest version of the QuickTime Player to resolve this issue. (VID-5997, VSG-5331)
Issue with clip playback following a record on the same player	After recording an AVCI clip on a MediaPort 7000 series, playing it back on the same player may result in an error. As a workaround, eject the clip and load it again before attempting to play on the same player on which it was recorded. (VSG-12420)
Issue with using ClipTool or ClipTool Pro to scrub audio	MediaPort 7000 features are individually licensed. If the license for a MediaPort is changed, scrub audio channel swapping can occur; tracks that should appear on channel 1-4 are played back, during scrub, on channels 5-8. The solution is to power cycle the MediaPort after the license change has been applied. (VSG-4692)

### Known Issues Related to Polaris Play

Synopsis	Description
See <i>Polaris Play: Playlist User Guide</i> for Playlist instructions	For the 8.3 release of Polaris Play: Playlist, the online help does not describe some features added in 8.3. For complete instructions, see the <i>Polaris Play: Playlist User Guide</i> included in the documentation suite.
Viewing the audit log files	For the Spectrum X and MediaDeck 7000, to view audit log files, log in to Spectrum Management according to the instructions in Accessing Spectrum Management, and then click <b>Monitor</b> > <b>Logs</b> > <b>Playout Audit Logs</b> .  For MediaDirectors and MediaCenters, to view audit log files, navigate to the following directory on the video server: /fs0/< video server name>/logs/playout (ESM-1510)



Synopsis	Description
Additional steps for replacing Spectrum video server when using Polaris Play	If you need to replace a Spectrum video server that is configured for Polaris Play: Playlist Control, contact Harmonic Technical Support for assistance with saving all necessary settings so they can be moved to the replacement video server. Failure to save settings such as Playout Channel configuration, playlists, and schedules, as directed by Technical Support, before replacing a Spectrum video server could result in the loss of those settings. (VSG-14025)
Playlist Control Playout Channel timecode support	The Playlist Control Playout Channel supports 25/29.97/50/50.94 Hz frame rates, but for 29.97/59.94 Hz only drop-frame timecodes can be used. (VSG-7478)
Playlist Control Playout Channel settings are not changed when corresponding player settings are changed	When a player on a ChannelPort is updated, System Manager does not update the configuration for the associated Playlist Control Playout Channel, and the Playlist Control Playout Channel cannot communicate with or control the player because the configurations no longer match.  Workaround: After the updating the player in SystemManager, navigate to the Playout Channel configuration page, and click Apply, even though no updates were made to that page. (VSG-7599)
Scheduler: warning when opening large schedules	When opening large schedules (1000 events or more), an unresponsive script warning may appear. If this happens, click Continue in the warning dialog. The browser will become responsive within a few seconds. (PPLY-109)

### Known Issues Related to Spectrum Management

Synopsis	Description
Deactivate	Before using Spectrum Management to enable UHD channel mode for a Spectrum X
players on	channel, make sure to deactivate any players configured on the remaining Spectrum X
second	channel (channel B). Failure to deactivate those players may make them inaccessible once
channel before	the system is in UHD channel mode. (VSG-14699)
enabling UHD	



# Known Issues Related to Player or File Type

Synopsis	Description
Issue with clips with same name	In some cases, removing a clip from the timeline and then playing another clip with the same name as the previous clip may result in errors. (VSG-14701)
Issue with switching sources when playing Open Captions	When playing a clip with Open Captions, if the mixer source for the channel is switched from Player to External In or Color Generator, Open Captions may continue to be displayed as though the Player was still visible. This could lead to Open Captions showing up on an unrelated External In source, or in a solid color unintentionally. (VSG-14802)
Issue with AVCU- Long GOP	If playing out Panasonic AVCU-Long GOP content, contact your Harmonic representative to discuss your specific workflow. (VSG-14717)
Issue with German subtitles	When using Spectrum subtitle insertion with German subtitles, some characters may not display correctly. (VSG-14340)
Issue with non- compliant A/53 closed caption	In some cases, when playing a clip that contains non-compliant A/53 closed caption data, the Spectrum X does not correctly play closed caption ANC data. This occurs when the output is configured for SD, and also when up converted to 720p and 1080i. For clips with compliant A/53 data, playout works as expected. (VSG-14596)
QuickTime self- contained only for record of AVC-Ultra and AVC (H.264) Long GOP	For record of AVC-Ultra and AVC (H.264) Long GOP files that use a QuickTime wrapper, Spectrum no longer supports the Reference format of QuickTime, only Self-Contained. (VSG-14209)
Increased bandwidth with players configured for 3G SDI (1080p)	Note that AVC-Intra players configured for 3G SDI (1080p) will consume roughly twice as much bandwidth as equivalent AVC-Intra players configured for HD, and plan your system configuration accordingly.  For example, note the difference in supported bit rates:  • XAVC-I Class 100 (Sony), 50 fps at 1080i/720p = 112 Mbps  • XAVC-I Class 100 (Sony), 50 fps at 1080p = 223 Mbps  For details about specific formats and bit rates, refer to the standards for those formats.



Synopsis	Description
Inconsistent error reporting for caption issues	For certain file types, such as DVCPRO, if the files have invalid captions, Spectrum reports caption-related error messages. However, for other file types, such as MPEG 50, Spectrum does not. (VSG-14027)
Captions or subtitles still displayed after file is removed	If a closed caption or subtitle insertion file is removed after a clip begins to play, the captions or subtitles will continue to be inserted until the clip finishes or is stopped. (VSG-13910)
PitchBlue re-wrap to QuickTime results in larger files than re- wrap to MXF	Due to limitations in the QuickTime format, using the Watch Folder feature to demultiplex PitchBlue files and re-wrap to QuickTime results in files that are roughly 30% larger than equivalent re-wrapped MXF files. (VSG-12847)
Issues from improved Samba performance	Depending on the client, Spectrum's SMB/CIFS/Samba networking performance has improved. This is due to a few factors, including Spectrum's new Samba service, Spectrum's new kernel, and new Windows* clients.
	In previous Spectrum releases, FTP was always faster than SMB/CIFS/Samba.  Now, using a powerful PC to do a drag and drop file transfer and writing to Spectrum via Samba can fill a 1 Gbit/sec network link.
	Additionally, when using a Windows 2008 client, Windows Explorer receives a higher priority than an FTP solution, such as FileZilla*, so that a drag and drop transfer to a Spectrum server can take all the bandwidth away from FTP running on the same server.
	As a result of this change in Spectrum's Samba networking performance, Samba bandwidth levels may compete with other networking flows (for example, FTP or AFP) and you may need to re-evaluate your networking balance.
	If you wish to disable the SMB2/SMB3 protocol on your Windows client in order to maintain previous behavior, refer to the following article: http://support.microsoft.com/kb/2696547. (VSG-12478)
Auto-Export to Harmonic MediaGrid limitations	<ul> <li>When using the Auto-Export to Harmonic MediaGrid feature, note the following:</li> <li>Auto-export watch folders are intended specifically for use with content that is recorded directly from a player to the watch folder. Harmonic does not support manually copying files into an auto-export watch folder.</li> <li>When using the Auto-Export feature to actively transfer files via FTP, Harmonic supports transfers of low latency clips only.</li> <li>If you are using the Auto-Export feature and you stop and start the Spectrum file system, you must restart the Spectrum video server before continuing to use Auto-Export.</li> </ul>



Synopsis	Description
	(VSG-12472, VSG-12407, VSG-12368, VSG-12418, VSG-12410)
Issue with Sony Cinemon/Smart render plugin and some MXF clips	Some MXF OP1a RDD9 clips published from Apple Final Cut Pro v. 7 with the Sony Cinemon/Smart render plugin may not be generated correctly and will show black frames on playout.  Contact Harmonic Technical Support for a workaround to correct this issue. (VSG-9214)
Jog/shuttle of GXF- wrapped clips is not supported	Spectrum does not support doing jog/shuttle of GXF-wrapped clips. As a work-around, rewrap the GXF files into a file type that has an index table, such as MXF OP1a. (VSG-8529, VSG-8632)
Some non-Spectrum MXF clips do not play correctly	Some clips do not contain the necessary information about the video sample rate.  The clip will play properly, but you may not be able to properly create black frames when necessary. This issue cannot be corrected by Harmonic. (VID-913)
XDCAM HD off-speed /advance play while transfer fails	If a clip is played off speed (32x) or the play head is advanced beyond the current transfer point, video will freeze or disappear entirely and error messages will appear in the system log. (VID-946)
Performance and file size issue with QuickTime recordings	The performance of QuickTime recordings may suffer and the associated file size may be unusually large when there are problems with, or interruptions in, the audio input. (VID-4125, VSG-3830)
Generic MXF files may be incorrectly identified as incomplete and stuck in scan mode	Loading actively recording MXF movies on another host in an EFS may result in a file being reported as incomplete and treated as such until the recording is complete. If this occurs, the workaround is to eject the movie from the playback Player timeline and reload. (VID-4636, FI-3924, VSG-4240)
Players unable to play QuickTime clips recorded at the maximum supported length	Spectrum players do not correctly load and play QuickTime clips at 59.94 Hz that are 5178816 frames in length (almost 24 hours). A "clip too long" message will appear. (VID-3124)
One frame difference between start timecode in MXF essence file and burned-in timecode for XDCAM HD and OP0a files	For XDCAM HD and OP0a files, the Start Timecode in the MXF essence file is one frame off from the burned-in timecode. (VID-2245)



Synopsis	Description
Error messages for incomplete MXF files	Attempting to load an incomplete MXF file can result in error messages stating that the file length is either too long or too short. These messages can be safely ignored. (VID-2261)
Error messages when using the IRT MXF Analyzer	For MXF clips containing AES3 audio recorded with Spectrum firmware preceding release 5.3, an IRT MXF Analyzer older than version 1.7.0.79 produces the following error message:
	1590 Error: The correct value <b>for</b> property Quantization bits is 16 and not 24 as encoded in the file.
	For MXF clips containing AES3 audio recorded with Spectrum firmware release 5.3, an IRT MXF Analyzer older than version 1.7.0.79 produces the following error message:
	1590 Error: The correct value <b>for</b> property Quantization bits is 20 and not 24 as encoded in the file.
	For MXF clips containing AES3 audio recorded with any version of Spectrum firmware, the IRT MXF Analyzer version 1.7.0.79 and later product an informational message indicating that the MXF Quantization Bits property exceeds that encoded in the file.
<u> </u>	These error messages can be safely ignored. (VID-2215)
Descriptive metadata cannot be set in some MXF IF50 clips	In certain circumstances, the descriptive metadata cannot be set for MXF IF50 clips. (VID-2188)
Index Start Position in some OP1a eVTR clips may result in audio defects	In certain Spectrum-generated OP1a eVTR clips, the Index Start Position item may incorrectly appear in a material package when it should only appear in an index table segment. As a result, when played back, these clips may contain audio defects such as "popping" or "fuzzy" noise. (VID-2143)



Synopsis	Description
Incorrect I-Frame movie length reported	The Media API may incorrectly report the length of an I-Frame movie that has more than one clip per track. (VID-1519)
Note on MXF clips	With an eVTR Op1a wrapper, IMX 50 4:2:2 accompanied by 8 channels of 24-bit AES3 audio is supported. While the SystemManager will allow the creation of an IMX 30, 40, or 50-only recorder (that is, no audio), you will not be able to record MXF with a video-only player. When creating MXF recorders you must specify one MPEG track configured for IMX 50 4:2:2 and one audio track with 8 channels of 24-bit AES3 audio.
	MXF, GXF, and QuickTime clip names are distinguished by extensions (.mxf, .gxf, and .mov); however, many applications refer to clips without extensions. Therefore, mixing clips of the same name but different extensions (for example, foo.mxf and foo. mov) in the same directory will lead to unpredictable results.
	QuickTime players cannot playback 24-bit AES3 MXF audio. If you intend to operate your system using both QT and MXF files, you should change all players to MXF including playback players. MXF playback players allow the playback of both MXF and QuickTime audio.

### Known Issues Related to the Media API

Synopsis	Description
Recommendations regarding resource management in the Media API	All Media API usage should be prefaced with a call to omMediaInit(), and followed by a call to omMediaShutdown(). A call to omMediaInit(), ensures that resources have been initialized. A call to omMediaShutdown()ensures that those resources have been released, allowing the application to exit safely.  Calls to omMediaInit() and omMediaShutdown() are thread-safe, and may be intermingled. An internal reference counter ensures that resources are not released until the final omMediaShutdown(). Note that DLL unloading will still leak memory. (VID-5612, VID-4557)
Media API does not understand newer AIFF files	Spectrum Firmware and the Spectrum Media API do not handle all AIFF chunk types. This prevents the Spectrum software from working with some types of AIFF material. There is no workaround for this issue. (VID-4969, VSG-4530)



## Known Issues Related to MediaTools (Applications)

Synopsis	Description
See Spectrum 8.3 Tools User Guide for FXTool and PreviewTool instructions	For FXTool and PreviewTool with Spectrum version 8.3, the online help does not describe some features added in 8.3. For complete instructions, see the <i>Spectrum 8.3 Tools User Guide</i> included in the documentation suite.
Using crash record in ClipTool Pro for 24 hours creates a file which cannot be played back	A crash record of the maximum length, 24 hours, cannot be played back.  During the record process, the clip somehow becomes two frames longer than allowed and cannot be played back in Clip Tool Pro 3.0. (APP-1112)
Failure to enable "Trim Audio Precharge" feature when editing a file with TrackTool may cause audio distortion	Editing a file with TrackTool without enabling the "Trim Audio Precharge" feature can result in audio distortion during playback of the edited file. (VID-2152, FI-1047)
ClipTool Pro record issue	During the record process, clips become 2 frames longer than allowed and cannot be played back in ClipTool Pro 3.1. (APP-1112)
No warning is issued when more than 96 audio channels are configured per video clip	When attempting to configure more than 96 channels of audio with TrackTool, there is no error reported via TrackTool. A maximum of 96 audio channels can be used for a video clip. Harmonic does not recommend configuring more than 96 tracks. (APP-1611)

### Known Issues Related to Third Party Equipment and Material

Synopsis	Description
Authoring graphic templates in Adobe Animate CC	At this time, Harmonic recommends using Flash Professional CS6 for authoring .swf templates. If using Adobe Animate CC, your template project must be configured for Flash Player 10.3 and ActionScript 3.0. You must use Flash Professional CS6 if your template project requires Text Layout Framework (TLF).
Using Spectrum- recorded AVC-Intra 100 MXF self- contained with Apple Final Cut Pro 7	In some cases, AVC-Intra 100 MXF self-contained files recorded by Spectrum system may not be recognized by Apple Final Cut Pro 7. (VSG-14139)



Synopsis	Description
RDD9 support with older Sony XDCAM-HD decks	Some older Sony XDCAM-HD decks do not import RDD-9 clips created using Spectrum MediaPorts because they do not support structural metadata in the footer partition. However, most new Sony XDCAM-HD decks do support RDD-9 clips created using Spectrum. (VID-3241)
Using KDE drag and drop copier to copy files to Spectrum system may result in files being written as "no stripe", resulting in very poor read performance	As a workaround, Harmonic recommends that you use a Windows or Macintosh computer to copy files to a Spectrum system or, if using a Unix computer, use the "cp" command from a terminal.
XDCAM-HD 4:2:2 50 Mb/s clips exported from Final Cut Pro require greater than nominal 50 Mb/s player bandwidth	Spectrum includes support for record and play out of Apple Final Cut Pro exported XDCAM-HD 4:2:2 50 Mb/s clips on MediaPort 5300, 5320, and 4000 series. The supported clip formats are 1920x1080i 29.97, 1920x1080i 25, 1280x720p 59.94, and 1280x720p 50. Since clips generated by Final Cut Pro often require more bandwidth than expected, in order to play back XDCAM-HD 50 Mb/s clips exported from Final Cut Pro, Spectrum players must be set higher than the nominal 50 Mb/s. While this value will vary depending upon the clip, a value of 60 Mb/s should be sufficient.  To record and play Final Cut Pro-exported XDCAM-HD 4:2:2 50 Mb/s clips, Harmonic recommends that you create two separate players using the Simple configuration: one player for record set at 50 Mb/s, and another player for play-out, with the bit rate set high enough to account for any variances in the exported file (60 Mb/s or above).  For more information on creating Players, refer to "Player Configuration" in the Harmonic SystemManager User Guide. (VID-1869)
Issues with IRT MXF Analyzer Pro Version 2.2.19	There are a number of known issues with this analyzer which do not have workarounds at this time.  From IRT51: (Sound element followed by S436M element)  Error: The Content Package contains a Sound Element followed by a SMPTE 436M VBI or ANC Element.  (VID-4442, VID-4455)



# **Synopsis Description** From IRT9: (Audio sample rate should be 48000/1 not 25/1) Error: The correct value for property SampleRate is 48000/1 and not 25/ 1 as encoded in the file. (VID-4448) From IRT6: 2226 Error: No Locator could be found for external essence referenced by Track Number 402718976 | 0x18010100 (VID-4447) From IRT3: (Invalid DV Essence Element) 212431 Error: Invalid essence element payload in Generic Container Element with Track Number $402718976 \mid 0x18010100$ of Essence Container with BodySID 2. Reason: Unknown DV video type Essence analyzer: DV-DIF. Essence Container Label: 06.0e.2b.34.04.01.01.01.0d.01.03.01.02.02 .01.01. Terminating essence parsing while processing edit unit number 1 (VID-4446) From IRT2: (Sound descriptor quantization bits should be 16 and not 24) 3392 Error: The Sound Essence Descriptor signals that the number of quantization bits is 24, which is higher than actually required (16)



# **Synopsis Description** as determined by parsing the essence. Note: In the case of AES3 Essence, the four most significant bits may not contain audio but auxiliary data. (VID-4445) From IRT11: (Incorrect bit rate) Error: The correct value for property BitRate is 8308800 and not 900000 0 as encoded in the file. (VID-4444) From IRT11: (Color siting for MPEG is 255 and not 3) Error: The correct value for property Color Siting is 255 and not 3 as encoded in the file (VID-4443) Essence container not identified as Data Essence Coding The RP224 value 06.0e.2b.34.04.01.01.07.0d.01.13.01.01.04.01.00 of "Ess ence Container" does not identify a data essence coding. (VID-4231, VSG-3912) From IRT1: (Invalid BER Length value of 6 for Wave Clip Wrapped Essence Element with KLV Key value of 06.0e.2b.34.01.02.01.01.0d.01.03.01.16.01.02.00)



### Synopsis Description

Error: Invalid BER Length value of 6 **for** Wave Clip Wrapped Essence Element with KLV Key value of 06.0e.2b.34.01.02.01.01.0d.01.03.01.16.01 .02.00

(VID-4450)

From IRT4: (Edit Boundary is not aligned)

135649 Error: The edit boundary is not aligned with the frame-wrapped Generic Container element KLV value boundary. The edit unit number 1 ends 19212 bytes after the KLV packet boundary. Essence analyzer: PCM Audio. Essence Container Label: 06.0e.2b.34.04.01.01.01.0d.01.03.01.02.06.01.00. The SampleRate of 30000/1001 is a integer multiple of the EditRate of the Package of 30000/1001. Therefore, edit units must be aligned with KLV boundaries in the case of a frame wrapped Generic Container. Note: This is reported only once for each element of a Generic Container.

(VID-4453, VSG-5803)

From IRT4: (Zero sized generic container size)

265329 Error: The size of this Generic Container Element of 0 differs from the size of the previous Element of 9600. Note: This is reported only once for each element of a Generic Container.

(VID-4454, VSG-5804)

From IRT51:



# Description Error: The Content Package contains a Sound Element followed by a SMPTE 436M VBI or ANC Element (VID-4455, VSG-5805) From IRT51: 15493 Error: Invalid essence element payload in Generic Container Element with Track Number 352388352 | 0x15010500 of Essence Container with BodySID 2. Reason: avcHeaders\_.sequenceParameterSet.get () != 0: File contains a VCL NAL unit without a previous Sequence Parameter Set. Essence analyzer: MPEG AVC Video. Essence Container Label: 06.0e. 2b. 34.04.01.01.01.04.01.03.01.02.10.61.01. Terminating essence parsing while processing edit unit number 1.