

# Harmonic® SystemManager

**RELEASE 5.25**

## User Guide

January 2013

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



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



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

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

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

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

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

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



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This chapter introduces the Harmonic SystemManager Release 5.25. It covers the following topics:

- [\*Overview\*](#)
- [\*Harmonic End User Documentation\*](#)
- [\*Available Media and Wrapper Formats\*](#)
- [\*SystemManager Interface\*](#)
- [\*Technical Support\*](#)

## Overview

The SystemManager application provides management capabilities for the Spectrum media server system, Spectrum MediaDirector, Spectrum MediaPort, Spectrum MediaStore, Spectrum MediaDeck 7000, Omneon MediaDeck, Omneon MediaGrid, Omneon ProBrowse System, Omneon ProXchange, and Omneon Media Application Server (MAS).

### SystemManager

The SystemManager acts as the administrative hub of an Spectrum media server installation. Its streamlined and intuitive browser-based user interface allows users to make rapid adjustments to system configurations, integrate additional components and identify fault conditions.

The SystemManager's fault reporting and alerting capabilities can head off issues before they become critical. It provides both facility wide control, as well as active monitoring and alerting.

### Spectrum

The Spectrum media server system is the industry's most scalable, reliable and cost effective video server and storage infrastructure for television production, playout, and archive applications — a solution that's transforming the economics of broadcasting for television operations worldwide. Media server solutions from Harmonic enable broadcasters to migrate from analog to digital, from tape to disk, from standard definition to high definition and from single to multi-channel operations.

By combining its expertise in broadcast with the best practices of information technology, Harmonic is able to deliver cost-effective and flexible networked media servers that meet the demanding requirements of broadcast environments. Spectrum media servers incorporate an open and advanced architecture, providing a facility with a scalable common server and storage infrastructure.

### MediaDirector

The MediaDirector component of the Spectrum media server system actively directs and manages the flow of data to and from all other components within a system such as MediaStore storage arrays, Omneon MediaPorts, and external networks.

The Omneon MediaDirector is the engine that drives the Omneon Spectrum server system managing the flow of data within the system in addition to managing bandwidth utilization. By coordinating media ingest, storage, and playout, it delivers functionality that bridges both IT and broadcast worlds.

MediaDirector components support 16 or 32 real-time channels. Multiple units can be linked to create even larger systems. Multiple high-speed serial buses guarantee real-time data flow to I/O components. A Gigabit Ethernet connection provides high-bandwidth data communication using SMB, FTP, and AFP (Apple® File Protocol).

## MediaCenter

Spectrum MediaCenter combines media server and storage functions in a single, compact 2 RU enclosure. Ideal for moderate (4 to 12) channel count applications, the system provides file system and communication management for video and audio ingest and playout activities.

MediaCenter supports a maximum of 600 Mbps real-time video bandwidth using up to six externally-connected Spectrum MediaPort 7000 and 5000 Series products, which provide video/audio interfaces as well as encode and decode for record and playback.

Clients access the system via up to 4 gigabit Ethernet (GbE) connections, and have access to FTP, CIFS, and AFP services. Combined, these services offer network throughput of up to 225 Mbps (varies with real-time play/record activity).

The system provides storage options with SATA or solid-state drives. Using 1 or 2 TB SATA drives, you can have 8 or 16 TB of usable storage (approximately 300 to 600 hours at 50 Mbps) protected with RAID 6 (dual-parity) technology. Using 480 GB SSDs, you can have up to 4.8 TB of usable storage with a 2 x (5+1) RAID configuration.

## MediaPort

Harmonic provides a full line of MediaPort interface adapters for video, audio, timecode and control. As with all Omneon Spectrum media server system components, these MediaPorts can be included in initial configurations or added to server system already on-line. Omneon Spectrum systems can support multiple MediaPorts to support multi-channel and mixed format requirements. Each modular MediaPort can be added, removed or configured on line and can support a broad range of formats, profiles and bit rates. Omneon MediaPorts provide the ultimate in redundancy and reliability. Each MediaPort incorporates an independent power supply.

## ChannelPort

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

## MediaStore

The MediaStore component of the Spectrum media server system provides scalable and reliable high performance disk-based shared storage for all content. The MediaStores are storage arrays containing up to 16 high-performance fibre channel disk drives. Since all of the disk subsystem management is provided in software by Spectrum MediaDirectors, including all File System and RAID information, there is no hardware controller required, allowing the disk drives to be arranged in a BOD (Bunch Of Disks) configuration. Software based storage control and management enhances the system's reliability by eliminating potential points of failure and enabling a higher degree of resiliency.

In addition, independent and redundant hot-swappable power supplies with automatic failover, hot-swappable disk drives, hot spares and integrated fans all combine to offer the highest level of failure protection. Speed and reliability are ensured by connecting MediaStore components to the overall server system (using the Spectrum MediaDirector) with multiple high-performance Fibre Channel arbitrated loops. Support for multiple RAID sets and hot spares allow broadcasters to be confident that their assets are protected.

## **Omneon MediaDeck**

The Omneon MediaDeck is a broadcast-quality video server designed specifically for broadcasters who need a cost-effective, easy-to-deploy platform for up to six channels. The MediaDeck is an integrated version of the Spectrum™ media server, combining storage, system management, Gigabit Ethernet connectivity and video I/O modules in one convenient two-rack-unit package. By leveraging the Spectrum architecture, MediaDeck combines mission-critical reliability with support for a complete range of broadcast workflows.

## **Spectrum MediaDeck 7000**

The Spectrum MediaDeck 7000 integrated media server delivers the broadcast quality and mission-critical reliability of the world's leading transmission server in a convenient and cost-effective package. MediaDeck 7000 provides up to four video channels, Gigabit Ethernet connectivity, and 3+1 RAID storage into a 1 rack unit (1-RU) chassis. With MediaDeck 7000, small broadcast and programming operations can implement server-based ingest and playout operations or sophisticated file-based workflows in a broad range of video formats.

## **Omneon MediaGrid**

### **ContentServer**

ContentServers provide Omneon MediaGrid™ with storage capacity for holding user data, network bandwidth for client access, and processing for file serving functions and running grid-based applications. A virtually unlimited number of ContentServers can be linked together in a system to achieve very high client access bandwidth, massive aggregate storage capacity, and a powerful multi-processing compute environment.

ContentServers with RAID support have dual active-active controllers and redundant data paths to protect against any storage node failures.

### **ContentStore**

ContentStores can be connected to ContentServers with RAID to provide additional storage bandwidth and capacity for holding user data. Up to five ContentStores can be connected to each ContentServer in order to maximize delivered bandwidth and efficiently achieve massive aggregate storage capacity.

### **ContentDirector**

ContentDirectors act as Omneon MediaGrid™ file system controllers, managing the distribution of data throughout the Omneon MediaGrid system and providing data maps to clients for retrieval of content from the systems. They provide this service to clients by creating and presenting a single virtual file system constructed from individual Omneon MediaGrid ContentServer storage devices. System reliability is maintained by deploying two or more ContentDirectors within a single Omneon MediaGrid. The file serving function is load balanced among all active ContentDirectors, so failure of any individual does not impact overall system operation.

## ContentBridge

The ContentBridge is an optional component that provides access to Omneon MediaGrid for clients not using a Omneon MediaGrid File System Driver (FSD). Omneon MediaGrid FSDs are lightweight file system drivers deployed on client systems to communicate with ContentServers and ContentDirectors. Harmonic offers FSDs for multiple operating systems, including Linux, Windows, and Mac OSX. For clients utilizing operating systems not supported by Omneon MediaGrid FSDs, the ContentBridge enables direct access to the Omneon MediaGrid system.

## ProBrowse

Extending the usability and functionality of the Spectrum media server system, the Omneon ProBrowse System can be used for creating and viewing low-resolution versions (proxies) of full-resolution material contained within a Spectrum system.

The Omneon ProBrowse system provides support for all major video formats and bit rates including HD and SD media stored in Harmonic systems using either QuickTime® or MXF.

With the Omneon ProBrowse media proxy system, broadcasters can now enjoy all the productivity benefits of a high-capacity media server with the added workflow benefits of easily and quickly accessible low-resolution media for previews, clip selections, research and approvals. ProBrowse can be deployed across multiple Omneon Spectrum media servers regardless of location, making it the perfect solution for enterprise-wide media viewing requirements.

The Omneon ProBrowse System includes the new Omneon ProBrowse Player. ProBrowse proxies are viewable by any standard desktop media player, including QuickTime® Media Player and Windows™ Media Player. Users can add or change metadata and mark in and out points on clips for playback from the Omneon Spectrum server.

## ProXchange

Omneon ProXchange is a high-performance transcoding system specifically designed for high-volume multi-format media environments. As the first application to take advantage of the combined storage and processing architecture of Omneon MediaGrid, ProXchange delivers grid-based transcoding of media files stored within Omneon MediaGrid.

ProXchange can transcode media files between a wide range of DV and MPEG-2 formats, including both SD and HD, as well as additional low-bit-rate distribution formats such as H.264. The scalable architecture of Omneon MediaGrid enables ProXchange to bring new levels of performance by distributing jobs across multiple processors in a Omneon MediaGrid active storage system.

## Media Application Server (MAS)

The Omneon Media Application Server, or MAS, provides the foundation for the development and deployment of media-centric applications. This software platform, running on standard hardware, enables efficient file-based workflows, eases third party integration, provides unified content management capabilities across various storage systems, provides a common view of content stored across multiple file systems, and allows partners to manage workflows from a single programming interface. MAS is based upon SOA principles so it can simplify application interfaces by exposing key functionalities of existing APIs such as those for searching file systems, transferring clips, managing metadata, and manipulating clips. Optional services include a powerful automatic proxy generation service, and a video transcoding service.

## Harmonic End User Documentation

Harmonic provides the following end user documentation for Omneon products:

- [\*SystemManager Documentation Suite\*](#)
- [\*Omneon Spectrum System Documentation Suite\*](#)
- [\*Omneon ProBrowse System Documentation Suite\*](#)
- [\*Omneon MediaGrid Documentation Suite\*](#)
- [\*Omneon ProXchange System Documentation Suite\*](#)
- [\*Omneon Media Application Server \(MAS\) Documentation Suite\*](#)

### SystemManager Documentation Suite

*Table 0-1* describes the documents which comprise the SystemManager Documentation Suite. All items are packaged in self-extracting files and available for download from the Omneon Support Server at the following location:

<http://support.omneon.com/Updates/Omneon/Current/SystemManager>

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

Documents are in .pdf and are packaged as follows:

- **SystemManager-v<version#>-Documentation.exe** contains the Release Notes, Installation Guide, and User Guide.

Adobe Acrobat\* is needed to view the product documentation. Download this for free from:

<http://www.adobe.com>

**Table 0-1: SystemManager Documentation Suite**

This document...	Provides this information...
<i>SystemManager User Guide</i> and Online Help System (this guide)	<ul style="list-style-type: none"><li>■ system operations procedures</li><li>■ system configuration procedures</li><li>■ ClipTool installation and operation procedures</li></ul>
<i>SystemManager Installation Guide</i>	<ul style="list-style-type: none"><li>■ software installation and upgrade details</li></ul>
<i>SystemManager Release Notes</i>	<ul style="list-style-type: none"><li>■ new features in the SystemManager release</li><li>■ last minute information regarding a product release</li></ul>

### Omneon Spectrum System Documentation Suite

*Table 0-2* describes the documents which comprise the Omneon Spectrum System Documentation Suite. All items are packaged in self-extracting files and available for download from the Omneon Support Server at the following location:

<http://support.omneon.com/Updates/Omneon/Current/Spectrum>

For Omneon MediaDeck documentation, use the following:

<http://support.omneon.com/Updates/Omneon/Current/MediaDeck>

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

Spectrum documents are in .pdf and are packaged in **MediaDeckAndSpectrum-v<version#>-Documentation.exe**.

For ChannelPort templates, tools, and documentation, download **ChannelPortTemplatesAndTools-v<version#>-SWandDoc.exe**.

Adobe Acrobat is needed to view the product documentation. Download this for free from:

<http://www.adobe.com>

**Table 0–2: Spectrum System Documentation Suite**

This document...	Provides this information...
	Spectrum (MediaDirector 2252, 2251, 2201, 2202, MediaCenter, MediaPort 5000, MediaPort 7000, ChannelPort)
<i>Spectrum System Installation and Hardware Reference Guide</i>	<ul style="list-style-type: none"> <li>■ System installation</li> <li>■ Software installation and upgrade details</li> <li>■ Orientation to system components including MediaDirectors, MediaCenters, MediaPorts, ChannelPorts, and MediaStores</li> <li>■ Troubleshooting system components</li> <li>■ Specifications for system components</li> </ul>
<i>Spectrum System Protocol Reference Guide</i>	<ul style="list-style-type: none"> <li>■ Command sets and preroll parameters for controlling MediaDirectors</li> <li>■ The Harmonic implementation of FTP server</li> </ul>
<i>Spectrum Quick Reference Guides</i>	<ul style="list-style-type: none"> <li>■ Front and back panel views of Spectrum devices</li> <li>■ LED assignments and legends</li> </ul>
<i>Spectrum ChannelPort Tools User Guide</i>	<ul style="list-style-type: none"> <li>■ Using ChannelPort tools</li> </ul>
<i>Spectrum ChannelPort Template Authoring Guide</i>	<ul style="list-style-type: none"> <li>■ ChannelPort template authoring</li> </ul>
<i>Spectrum Component Replacement Guide</i>	Component replacement instructions for all Spectrum devices
<i>Spectrum and MediaDeck Release Notes</i>	Last minute information regarding a product release
<i>Spectrum Media and Wrapper Formats</i>	Supported clip types and wrapper formats
Spectrum MediaDeck 7000	
<i>Spectrum MediaDeck 7000 User Guide</i>	<ul style="list-style-type: none"> <li>■ System installation</li> <li>■ Upgrade instructions</li> <li>■ Orientation to system components'</li> </ul>

<i>Omneon MediaDeck Installation Guide</i>	System installation
<i>Spectrum and MediaDeck Release Notes</i>	Last minute information regarding a product release
<i>Spectrum MediaDeck 7000 Read Me First</i>	<ul style="list-style-type: none"> <li>■ Passwords for downloading MediaDeck and SystemManager files</li> <li>■ Instructions for obtaining and installing the license file for SystemManager</li> <li>■ Installation overview</li> </ul>
Spectrum (MediaDirector 2100, 2101, 2102, 2102B, MediaPort 1000, 3000, 4000, 6000 Series)	
<i>Omneon Spectrum System Getting Started Guide</i>	<ul style="list-style-type: none"> <li>■ System installation</li> <li>■ Software installation and upgrade details</li> </ul>
<i>Spectrum System Hardware Orientation Guide</i>	<ul style="list-style-type: none"> <li>■ Orientation to system components including MediaPorts and MediaStores</li> <li>■ Troubleshooting system components</li> <li>■ Specifications for system components</li> </ul>
<i>Omneon Spectrum System Protocol Reference Guide</i>	<ul style="list-style-type: none"> <li>■ Command sets and preroll parameters for controlling MediaDirectors</li> <li>■ The Harmonic implementation of FTP server</li> </ul>
<i>Omneon Spectrum Quick Reference Guides</i>	<ul style="list-style-type: none"> <li>■ Front and back panel views of Spectrum devices</li> <li>■ LED assignments and legends</li> </ul>
Omneon MediaDeck	
<i>Omneon MediaDeck User Guide</i>	<ul style="list-style-type: none"> <li>■ System installation</li> <li>■ Upgrade instructions</li> <li>■ Orientation to system components</li> </ul>
<i>Omneon MediaDeck Installation Guide</i>	System installation
<i>Spectrum and MediaDeck Release Notes</i>	Last minute information regarding a product release
<i>Omneon MediaDeck Read Me First</i>	<ul style="list-style-type: none"> <li>■ Passwords for downloading MediaDeck and SystemManager files</li> <li>■ Instructions for obtaining and installing the license file for SystemManager</li> <li>■ Installation overview</li> </ul>

## Omneon ProBrowse System Documentation Suite

*Table 0-3* describes the documents which comprise the Omneon ProBrowse System Documentation Suite. All items are packaged in self-extracting files and available for download from the Omneon Support Server at the following location:

<http://support.omneon.com/Updates/Omneon/Current/ProBrowse>

You can also access the product guides from the Help menus for the ProBrowse Desktop applications.

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

Adobe Acrobat is needed to view the product documentation. Download this for free from:

<http://www.adobe.com>

**Table 0–3: ProBrowse System Documentation Suite**

This document...	Provides this information...
<i>Omneon ProBrowse System Installation and User Guide</i>	<ul style="list-style-type: none"> <li>■ overview of the complete system</li> <li>■ detailed information about each system component</li> <li>■ software installation procedure</li> <li>■ orientation to the Desktop user interface</li> <li>■ operation of the ProBrowse Explorer and the ProBrowse Player</li> </ul>
<i>Omneon ProBrowse System Release Notes</i>	<ul style="list-style-type: none"> <li>■ last minute information regarding a product release</li> </ul>

## Omneon MediaGrid Documentation Suite

*Table 0–4* describes the documents which comprise the Omneon MediaGrid Documentation Suite. All items are packaged in self-extracting files and available for download from the Omneon Support Server at the following location:

<http://support.omneon.com/Updates/Omneon/Current/MediaGrid>

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

Adobe Acrobat is needed to view the product documentation. Download this for free from:

<http://www.adobe.com>

**Table 0–4: Omneon MediaGrid Documentation Suite**

This document...	Provides this information...
<i>Omneon MediaGrid Installation and Configuration Guide</i>	<ul style="list-style-type: none"> <li>■ new features in this release, Omneon MediaGrid and components overview, software installation and upgrade details</li> </ul>
<i>Omneon MediaGrid Component Replacement Guide</i>	<ul style="list-style-type: none"> <li>■ component replacement instructions</li> </ul>
<i>Omneon ContentManager User Guide</i>	<ul style="list-style-type: none"> <li>■ installation and operational information for the ContentManager; an application for setting, reviewing and changing attributes on associated files, directories, and user permissions on the Omneon MediaGrid</li> </ul>

This document...	Provides this information...
Quick Reference Guides	<ul style="list-style-type: none"> <li>■ front and back panel views of Omneon MediaGrid hardware components</li> <li>■ component LED assignments and legends</li> </ul>
Release Notes	<ul style="list-style-type: none"> <li>■ last minute information regarding a product release</li> </ul>

## Omneon ProXchange System Documentation Suite

*Table 0-5* describes the documents which comprise the Omneon ProXchange Documentation Suite. All items are packaged in self-extracting files and available for download from the Omneon Support Server at the following location:

<http://support.omneon.com/Updates/Omneon/Current/ProXchange>

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

Adobe Acrobat is needed to view the product documentation. Download this for free from:

<http://www.adobe.com>

**Table 0-5: ProXchange System Documentation Suite**

This document...	Provides this information...
<i>Omneon ProXchange Installation and User Guide</i>	<ul style="list-style-type: none"> <li>■ new features in this release, ProXchange and components overview, software installation and upgrade details</li> </ul>
<i>Omneon ProXchange Release Notes</i>	<ul style="list-style-type: none"> <li>■ last minute information regarding a product release</li> </ul>

## Omneon Media Application Server (MAS) Documentation Suite

*Table 0-6* describes the documents which comprise the Omneon MAS Documentation Suite. All items are packaged in self-extracting files and available for download from the Omneon Support Server at the following location:

<http://support.omneon.com/Updates/Omneon/Current/MediaApplicationServer>

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

Adobe Acrobat is needed to view the product documentation. Download this for free from:

<http://www.adobe.com>

**Table 0–6: Omneon MAS System Documentation Suite**

<b>This document...</b>	<b>Provides this information...</b>
<i>Omneon Media Application Server Installation and Configuration Guide</i>	<ul style="list-style-type: none"> <li>■ MAS system and component overview</li> <li>■ system installation and configuration</li> <li>■ upgrade and reinstallation</li> </ul>
<i>Omneon Media Application Server User Guide</i>	<ul style="list-style-type: none"> <li>■ Viewing System and Data Status</li> <li>■ Managing File System Folders</li> <li>■ Managing Media and Metadata</li> <li>■ Viewing and Searching Media</li> <li>■ Managing System Devices and Software</li> <li>■ Managing Users</li> <li>■ Managing File Rules</li> <li>■ Mirroring Media</li> <li>■ Using ProBrowse to Manage Lowresolution</li> <li>■ Media</li> <li>■ Transferring Content</li> <li>■ Using ProXchange to Transcode Media</li> </ul>
<i>Omneon Media Application Server API Programmer's Guide</i>	<ul style="list-style-type: none"> <li>■ Descriptions of API functions, data structures, enumerations, and error codes</li> </ul>
<i>Omneon Media Application Server Release Notes</i>	<ul style="list-style-type: none"> <li>■ last minute information regarding a product release</li> </ul>

## Locating the Latest Documentation on the Harmonic Website

The latest product documentation, as well as information provided for older releases, is available on the Harmonic website at: <http://www.harmonicinc.com/documents-detail>.

## Available Media and Wrapper Formats

For information on supported media types and wrapper formats, refer to *Spectrum Media and Wrapper Formats* packaged with the Spectrum documentation suite.

## Documentation Terms and Abbreviations

- **Application Process** refers to the internal Linux process that is executing an application on a ContentServer.
- **Checkpoint** is a capture of the Omneon MediaGrid File System metadata.
- **Balancing** is the process of distributing disk space evenly across ContentServers in a cluster.
- **ChannelPort** is a channel playout platform that provides integrated clip playback, branding, master control switching, and support for Emergency Alert Systems.
- **Cluster**, in the context of an Omneon MediaGrid, refers to a collection of one or more volumes and groups, and their associated ContentDirectors and ContentServers within an Omneon MediaGrid.

- **ContentBridge** is an optional server that provides standard interfaces to the Omneon MediaGrid for clients that do not have the OCL File System Drive (FSD) installed or an FSD is not available. The interfaces provided are CIFS and FTP.
- **ContentDirector** is the device that manages operation on the Omneon MediaGrid, including load balancing. It is the primary point of contact for clients and determines the ContentServer availability.
- **ContentServers** are intelligent storage systems that actively monitor and replicate the slices stored on them. ContentServers present content (data) to clients and manage the actual data on hard drives.
- **DV** refers to Digital Video, a compressed digital video format for sound and picture.
- **Embedded** refers to two different concepts in this guide:
  - The first usage is the embedding of audio data in SDI video streams. The Spectrum system can input and output audio data either separately (on AES/EBU connections), or *embedded* within the SDI video stream.
  - The second usage pertains to the recording of VBI data. The Spectrum system gives the option of embedding VBI data within an MPEG file, or recording the VBI data in a separate file
- **Frame** or **Chassis** both refer to the specific hardware component of an Spectrum device such as a MediaPort or MediaDirector.
- **Group**, in the context of an Omneon MediaGrid, refers to a collection of one or more ContentServers and ContentDirectors in an Omneon MediaGrid.
- **Hot Swappable** refers to an electronics board or component (such as a fan or disk drive) that can be removed from or installed in a chassis while system power is on.
- **Input** refers to an audio or video signal that is connected to a MediaPort. Input also refers to the physical input connectors on the MediaPort frame.
- **Interleaved** refers to audio that is recorded within the DV (video) file itself.
- **MediaGrid Application Processing** refers to the capability of the Omneon MediaGrid system to provide application processing across clustered ContentServers in an Omneon MediaGrid.
- **MediaPort** refers to an interface adapter for video, audio, timecode and control. In this documentation, use of the term MediaPort refers to both single channel units (MediaPort) and multiple channel units (MultiPort), except where noted.
- **Mount Point** (Omneon MediaGrid) refer to the physical location in the directory structure where a computer puts the files in a File System.
- **Omneon MediaGrid File System** refers to the file system on the Omneon MediaGrid.
- **Output** refers to an audio or video signal that is connected *from* a MediaPort to a destination digital device. Output also refers to the physical output connectors on the MediaPort frame.
- **Playout Channel**: is a process that runs on a Spectrum video server, which provides control for players and graphics, allowing you to preview graphics with the ChannelPort PreviewTool.
- **SDI** refers to Serial Digital Interface, a system whereby uncompressed digital component video signals are distributed using coaxial cable. An SDI signal can include embedded audio.
- **SDTI** refers to a protocol for transporting data at high bitrates (up to 270 Mbps) over a serial transmission line. The protocol is defined in the SMPTE 305.2M-200 specification. SDTI may carry different types of data, including various forms of compressed video.
- **SDTI-CP** refers to a Sony variation of SDTI for carrying IMX MPEG video at 50 Mbps.

- **Source** refers to an audio/video device whose output signals are connected to one or more MediaPort inputs.
- **System** refers to an entire Spectrum System and all of its components unless noted as an Omneon ProBrowse System.
- **UI** refers to the SystemManager's User Interface (as viewed on a web browser).
- **VC-3** is a video format defined by the SMPTE 2019-1 standard.
- **VANC** refers to the Vertical ANCillary data in the active portions of lines in the vertical interval.
- **Volume**, in the context of an Omneon MediaGrid, refers to a collection of one or more groups and their associated ContentServers and ContentDirectors in an Omneon MediaGrid.

*Table 0-7* is a list of abbreviations and their definitions used in this document.

**Table 0-7: Abbreviation Definitions**

Abbreviation	Definition
ACE	Access Control Entry (Omneon MediaGrid)
ACL	Access Control List (Omneon MediaGrid)
A-D	Analog-to-Digital
AES	Audio Engineering Society
AP	Application Process
AUX	Auxiliary
CBR	Constant Bit Rate
CG	Character Generator
CIFS	Common Internet File System
D-A	Digital-to-Analog
DAT	Digital Audio Tape
DDR	Digital Disk Recorder
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
DV	Digital Video
DVTR	Digital Video Tape Recorder
EAS	Emergency Alert System
E-E	Electronics to Electronics
EFS	Extended File System
FC-AL	Fibre Channel Arbitrated Loop
FCP	(Apple's) Final Cut Pro

Abbreviation	Definition
GOP	Group of Pictures
MGAP	MediaGrid Application Processing
Mbps	Megabits per second
MCP	Media Control Processor
MCS	Master Control Switcher
MIB	Management Information Base (database)
MIP	Media Interface Port
MMS	Media Manager System
MPEG	Motion Picture Experts Group
MSC	Media Storage Chassis
MXF	Media eXchange Format
NAS	Network Attached Storage
NLE	Non Linear Editor
NMS	Network Management System
OMFS	Omneon MediaGrid File System
RU	Rack Unit
SAN	Storage Area Network
SDI	Serial Digital Interface
SDTI	Serial Data Transport Interface
SMB	Server Message Block
SNMP	Simple Network Management Protocol
VBI	Vertical Blanking Interval
VDCP	Video Disk Control Protocol
VTR	Video Tape Recorder
VCR	Video Cassette Recorder

## SystemManager Interface

The SystemManager application provides a user interface for monitoring and configuring Harmonic components, including Spectrum System MediaDirectors, MediaPorts and MediaStores; ProBrowse System Servers and Generators; Omneon MediaGrid ContentServers, ContentDirectors, and ContentBridges; and MediaDecks.

The SystemManager consists of a service (Manager service) which launches when the SystemManager Platform boots up. This service includes a web server and integrated libraries which communicate with the Spectrum and ProBrowse components using TCP/IP and UDP/IP over Ethernet.

The SystemManager also provides a library which integrates into the Microsoft SNMP Agent (SNMP Service). This library serves as a proxy SNMP agent, allowing other network management system products to access a subset of information about the Harmonic equipment from enterprise or workgroup management products (for example, HP OpenView). Refer to *About SNMP Support* for additional information about SNMP features.

The SystemManager application is the system's Network Management Server. The SystemManager runs as a web server that communicates with MediaDirectors over Ethernet.

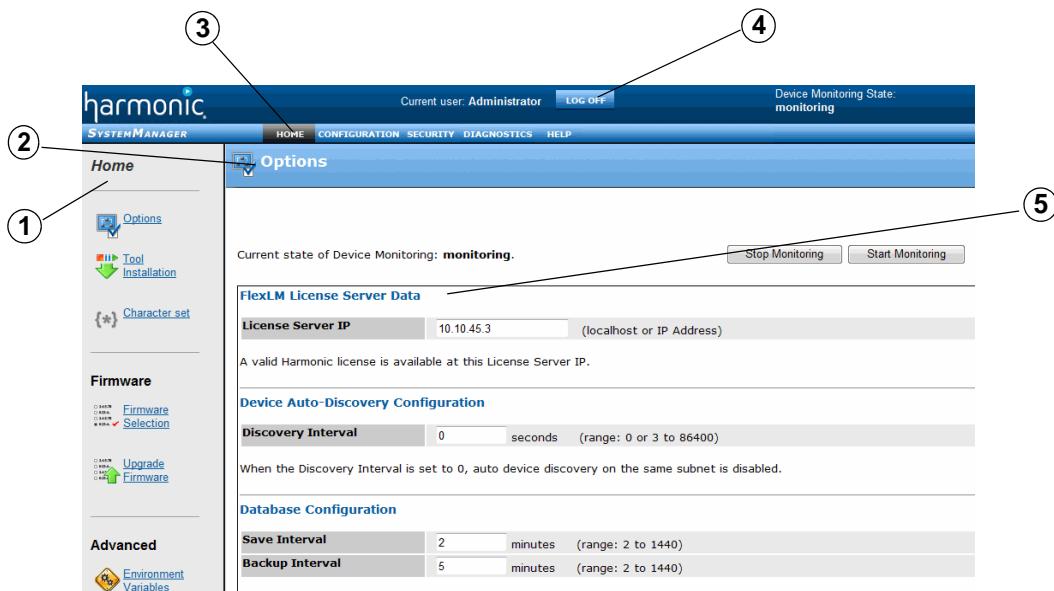
Using the SystemManager, the capabilities and performance of each SystemManager tool can be configured, monitored or updated as follows:

- Configuration management deals with network topology, the “state” of the network, device names, “Player” configuration, end-to-end connections, bandwidth and other related network configuration tasks.
- Fault management handles detection and correction of network problems through error detection processes and diagnostic testing.

## SystemManager User Interface Layout

The SystemManager user interface is divided into five main sections as discussed below.

Note for simplicity, the Web browser Menu Bar, Standard Buttons, and Address Bar are not shown in *Figure 0-1*.



**Figure 0-1: SystemManager Layout**

Following are descriptions of each section as listed in the illustration.

1. **Left-hand Column**

The left-hand column provides icons for various categories of functions found under a main heading. Clicking an icon in the left-hand column changes the **Title Bar** heading and displays the associated functions in the **Data Section**. The left-hand column scrolls vertically if the list of icons exceeds the window length.

## 2. Title Bar

The **Title Bar** displays the name of the page (or function) that has been selected in the left-hand column. The bar scrolls along with the entire **Data Section**.

## 3. Screen Tabs

The **Screen Tabs** are *buttons* for the SystemManager's main sections. Clicking a tab switches the page, changes the icons in the left-hand column and displays the page's title in the **Title Bar**. You can switch tabs without restriction.

## 4. Log Off Button

Click the **Log Off** button to log off the SystemManager application and display the **Log Off Confirmation** page. Note that adjacent to the **Log Off** button, a label displays the facility name and current user.

## 5. Data Section

The **Data Section** is the status display and primary working area for the SystemManager. The section displays all pertinent information for the selected left-hand column function, and the section scrolls vertically if the list of functions and fields exceeds the window length.

## Table Sorting

A number of windows in the SystemManager display an underline/hyperlink indicator on table column headers (see [Figure 0-2](#)). By clicking on a column header, you can now change the sort order of rows in a table.

Harmonic MediaGrid													
Clusters													
Name	#Volumes	#Groups	#Filesystems	Total Disk Space	Free Space(%)	Wink Status	Select						
cld19	1	1	1	70.00 TB / 63.67 TiB	77.57	Off	<input type="checkbox"/>						
mg11kenko	1	1	1	29.84 TB / 27.14 TiB	94.83	Off	<input type="checkbox"/>						
cld-mgr	1	1	1	19.90 TB / 18.09 TiB	100.00	Off	<input type="checkbox"/>						
<input type="button" value="Wink On"/> <input type="button" value="Wink Off"/> <input type="button" value="Select all"/> <input type="button" value="Clear"/>													
ContentDirectors													
Name	IP Address	IP Address 2	Network Status	AD Connection Status	System Up Time	Total Disk Space	Free Space (%)	Cluster	System Management	Wink Status			
cld-mgr-2	10.4.180.10	10.4.180.11	Connected -- Not Logged in -- Error Alarm	Down	71 days, 21:34:51.01	19.90 TB / 18.09 TiB	100.00	cld-mgr	System Management	Off <input type="checkbox"/>			
mg RAID- eng11-1	10.4.175.8	10.4.175.9	Connected -- Not Logged in -- Error Alarm	Up	43 days, 21:33:05.93	29.84 TB / 27.14 TiB	94.83	mg11kenko	System Management	Off <input type="checkbox"/>			
cld-mgr-1	10.4.180.8	10.4.180.9	Connected -- Not Logged in -- Error Alarm	Down	28 days, 9:46:58.84	19.90 TB / 18.09 TiB	100.00	cld-mgr	System Management	Off <input type="checkbox"/>			
mg RAID- eng11-2	10.4.175.10	10.4.175.11	Connected -- Not Logged in -- Error Alarm	Up	43 days, 3:53:59.80	29.84 TB / 27.14 TiB	94.83	mg11kenko	System Management	Off <input type="checkbox"/>			
cld19-2	10.4.59.204	10.4.59.205	Connected -- Not Logged in	Down	97 days, 4:31:26.12	70.00 TB / 63.67 TiB	77.57	cld19	System Management	Off <input type="checkbox"/>			
cld19-1	10.4.59.200	10.4.59.201	Connected -- Not Logged in	Down	97 days, 4:30:41.94	70.00 TB / 63.67 TiB	77.57	cld19	System Management	Off <input type="checkbox"/>			
<input type="button" value="Wink On"/> <input type="button" value="Wink Off"/> <input type="button" value="Select all"/> <input type="button" value="Clear"/>													

Figure 0-2: SystemManager Table Example

## Navigation

To move between pages, click a **Screen tab** then select the desired function in the left-hand column. Within a particular page, you can re-click an icon in the left-hand column to go back one level.

Note that many pages in the **Data Section** have convenient hyperlinks to other areas — typically, clicking the icon of an Spectrum System device (such as the MediaStore or MediaDirector) takes you to a page with information specific to that device. You will find, as you learn to navigate the SystemManager, that there are several ways to get from one place to another.

Note the following important SystemManager navigation caveats:

- The application contains many hyperlinks. Internet Explorer allows you to right-click on a hyperlink and select “Open Link In New Window” or “Open In New Window” (depending upon the type of link) from the pop up menu. This, however, results in an error message. Thus, the recommended method to open a new browser window is to click **File > New > Window**, or simply to press **CTRL + N**.
- Within the application, the browser’s **Back** button functions erratically. The recommended method is to use the navigation icons in SystemManager.

## MediaDeck Component Interface

In the SystemManager interface, MediaDecks appear as dual-host MediaDirectors with two MediaPorts and eight-disk drive MediaStores attached (example in *Figure 0-3*)

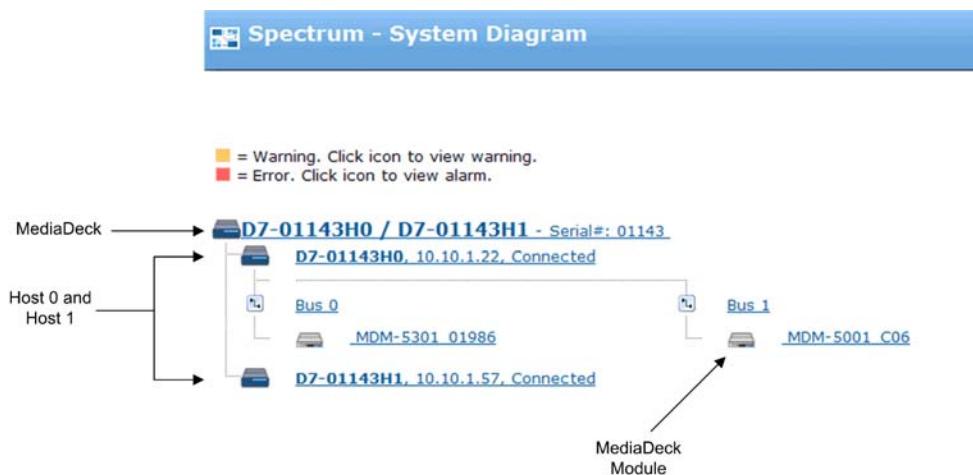


Figure 0-3: System Diagram—MediaDeck Detail

Note that the following terms are interchangeable across the SystemManager interface:

- **MediaDeck** information is sometimes displayed as **MediaDirector** information.
- **MediaDeck Module** information is sometimes displayed as **MediaPort** information.
- **MediaDeck Storage** information is sometimes displayed as **MediaStore** information.

## Technical Support

See [Contacting the Technical Assistance Center](#) for information on contacting Technical Support.

## Useful Information when Contacting Technical Support

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

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

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

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

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

- **Which Windows operating system is running on the SystemManager client PC?**

1. From Windows, click the **Start** button, and then click **Run**.
  2. In the **Open** field, type: winver, and then press **Enter** to open the **About Windows** dialog box, which shows the version number.
- **How much memory is installed on the SystemManager platform? (for example, 256 MB, 512 MB, or 1 GB)**
1. From Windows, click the **Start** button, and then click **Run**.
  2. In the **Open** field, type: winver and then press **Enter** to open the **About Windows** dialog box. Look for the line that reads, "Physical memory available to Windows."

- **Please provide the manager.oda file from the SystemManager platform or client PC**

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

- **What is the model and serial number of the hardware involved?**

- ❑ For Spectrum and MediaDeck devices: from the **Home** tab, click the **Upgrade Firmware** icon in the left-hand column to display the **Upgrade Firmware** page. Both MediaDirectors and MediaDecks are listed in the **MediaDirectors** section. Find the Model Numbers and Serial Numbers listed in their respective columns.

Scroll down to the **MediaPorts** section to view the Model Numbers and Serial Numbers for MediaPorts and MediaDeck Modules.

- ❑ For Omneon MediaGrid Devices: Click the **Servers & Switches** icon in the left-hand column. From the Servers and Switches page, in the **Name** column, click the link for the Omneon MediaGrid device to open the **Properties** page for that device.
- ❑ For ProXchange devices: Click the ProXchange Servers icon in the left-hand column. From the **Servers** page, in the **Name** column, click the link for the ProXchange device to open the **Properties** page for that device.
- ❑ For ProBrowse devices: Click the ProBrowse Servers icon in the left-hand column. From the **Servers** page, in the **Name** column, click the link for the ProBrowse device to open the **Properties** page for that device.
- ❑ For MAS devices: Click the MAS Servers icon in the left-hand column. From the **Servers** page, in the **Name** column, click the link for the MAS device to open the **Properties** page for that device.

## For Spectrum Systems

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

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

- **What file format and bit rate is the Player configured for? (for example, MPEG, DV, or IMX?)**

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

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

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

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

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

## For Omneon MediaGrid Systems

For failures with the Omneon MediaGrid client:

- **What operating system is running on the client computer?**
- **What applications are you using?**
- **What version of the Omneon MediaGrid FSD is installed?**

To determine the FSD version on Windows:

1. From the Control dialog box, click the **Add/Remove Programs** icon.
2. Locate the **Omneon MediaGrid File System Driver** entry and click the link that reads, **Click here for support information**. The version is displayed.

To determine the FSD version on Macintosh:

1. Select **Find** from the **File** menu.
2. Click **Applications** in the Finder sidebar of the **Searching "This Mac"** window.
3. Double-click the **Connect to MediaGrid** icon to open the **Connect to Omneon MediaGrid** dialog box.

To determine the FSD version on Linux:

Use the following command: `tail /proc/sys/omfs*`

- **Please supply an error message, screen capture, or description of the symptom.**
- **Is the issue repeatable? If so, what is the procedure to reproduce the issue?**
- **Please supply log files for the client FSD and ContentBridge FSD.**

Once you are able to reproduce the issue, Technical Support may ask you to provide log files from the client computers or the ContentBridge. The following instructions describe how to turn on logging on a client system.



**IMPORTANT:** Do not perform the following procedures unless directed by Technical Support.

**To enable logging for a Windows client:**

1. Add two registry parameters to the OmRdr registry key:  
HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\OmRdr\Parameters
  - ❑ DWORD “debug” with value 1
  - ❑ DWORD “LogFile” with value 1
2. For debug to take effect, make sure the client is mounted to the Omneon MediaGrid system.
3. For LogToFile to take effect, run the “taillog” executable and redirect the output to a file. From the **Start** menu, click **Run**, and paste the location of tailog.exe and desired location of the log file into the **Open** field, as shown in this example: “C:\Program Files\Omneon\Omneon MediaGrid\taillog.exe” > c:\clxxxxxx-1.log  
In this example, the log file will be created at the c:\ directory.
4. Reproduce the issue, and then collect all log files from tailog and the omxxx.log from the WinFSD installed directory.
5. Once you have collected the log files make sure to delete the LogToFile parameter from the registry, otherwise it will have a negative impact on performance.

**To enable logging for a Macintosh client:**

1. Run the following command to ensure that the debug level is set to default:  
`sudo sysctl -w debug.omfs=3`
2. Reproduce problem.
3. Collect the following log files: /var/log/system.log and /var/log/kernel.log.

**To collect log messages for a Linux client:**

Collect /var/log/messages.

Harmonic may also wish to collect the current configured Linux FSD parameters. Access these by entering the following command:

```
cat /proc/sys/omfs*
```

**To collect log messages for the ContentBridge:**

Locate the log file at:/var/log/omneon/remote/<IP address of ContentBridge>.

■ **What was the time of the failure?**

For information on the time of failure, navigate to the **View Alarms** page in SystemManager. To open the View Alarms page, click the **Diagnostics** tab, and then click the **View Alarms** icon in the left-hand column.

**For failures with the Omneon MediaGrid cluster:**

■ **What is the name of the device that experienced the failure?**

From SystemManager, click the **Servers & Switches** icon in the left-hand column to access the **Servers & Switches** page. Device names are listed in the **Name** column.

■ **Please provide an error message and/or a description of the symptom.**

■ **Is this failure affecting clients or other systems?**

- **Please provide the appropriate log file or remote access to the device.**

The Omneon MediaGrid provides logs files for all of the core services. Technical support may wish to view one of these logs to determine the root cause of the problem. The following three log files are used most often when troubleshooting. These files are located on the ContentDirector at /var/log/omneon.

- **ssmd:** SliceServer Manager
- **mdscore:** MetaData Server
- **startup:** Core Omneon MediaGrid Services Startup and Shutdown

# Part I: SystemManager

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# Chapter 1

## SystemManager Basic Configuration

---

This chapter provides basic configuration and operation instructions for the SystemManager application. Choose from the following:

- [\*Logging on to the SystemManager Application\*](#)
- [\*About the SystemManager Database and File Details\*](#)
- [\*Setting the Discovery Interval\*](#)
- [\*Setting the Database Configuration\*](#)
- [\*Setting the Facility Name\*](#)
- [\*Monitoring Hot Spares\*](#)
- [\*Setting the GUI Refresh Interval\*](#)
- [\*Controlling Track Tags on Players\*](#)
- [\*Configuring the Player Resource Check\*](#)
- [\*Configuring Player Case Sensitivity\*](#)
- [\*Configuring Players to Stop Recording When the Disk Is Full\*](#)
- [\*Configuring Players to Stop Recording When an Input Error Occurs\*](#)
- [\*Configuring Players to Use 704 Up/Down Conversion By Default\*](#)
- [\*Configuring Players to Ignore RP186 \(Chroma LSB\) AFD\*](#)
- [\*Setting E-mail Alarm Notifications\*](#)
- [\*Changing Firmware Version Source Files\*](#)
- [\*Logging off the SystemManager\*](#)



**NOTE:** The procedures outlined in this section are written for *qualified technical personnel*, skilled at advanced networking procedures. If you have any questions, please consult with your facility's Information Service staff or contact Technical Support.

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### Logging on to the SystemManager Application

This section provides instructions for logging in to the SystemManager application using Internet Explorer browser. Use this procedure to access the SystemManager and control Harmonic devices from both local and remote computers. The SystemManager application does not have to be installed on the local or remote PC in order to log in.



**NOTE:** A valid license is required to operate the SystemManager application on either a SystemManager Platform or a customer-supplied PC. Refer to "Obtaining and Installing a SystemManager License File" in the *Harmonic SystemManager Installation Guide* for detailed instructions on obtaining and installing a license file for use on the SystemManager hardware. You should have already installed the license file before logging on to the SystemManager application.

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#### To log on:

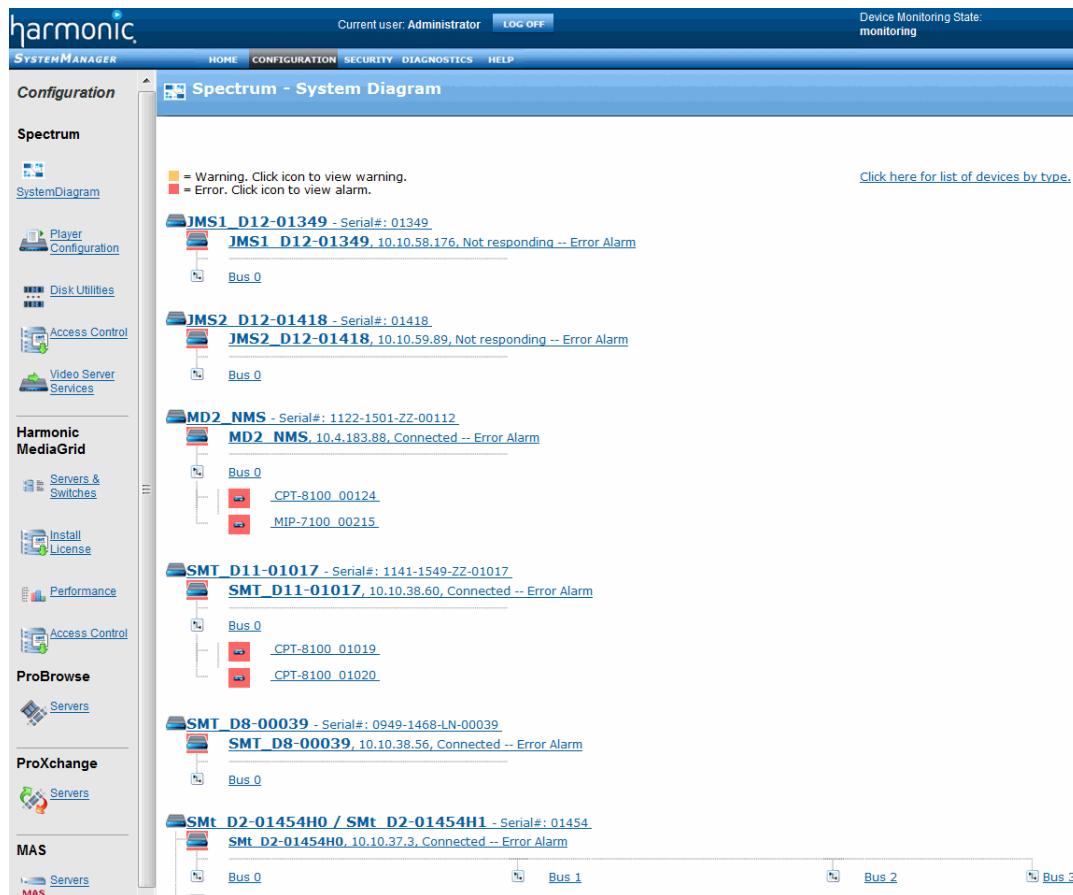
1. From your SystemManager Platform or client-PC, double click the **Internet Explorer** icon to launch Internet Explorer.

2. If the **SystemManager Login** dialog does not appear automatically, there are two different ways to log in, depending upon the computer's location:
  - For the SystemManager Platform or client-PC itself, in the address bar type:  
`http://localhost/`
  - For any other PC, in the address bar type the name (or IP address) of the SystemManager Platform. This name (or address) can be obtained from your system administrator. For example:  
`http://Managerpc/`
3. Press **Enter**. to display the **SystemManager Login** (*Figure 1–1*).



**Figure 1–1: SystemManager Login**

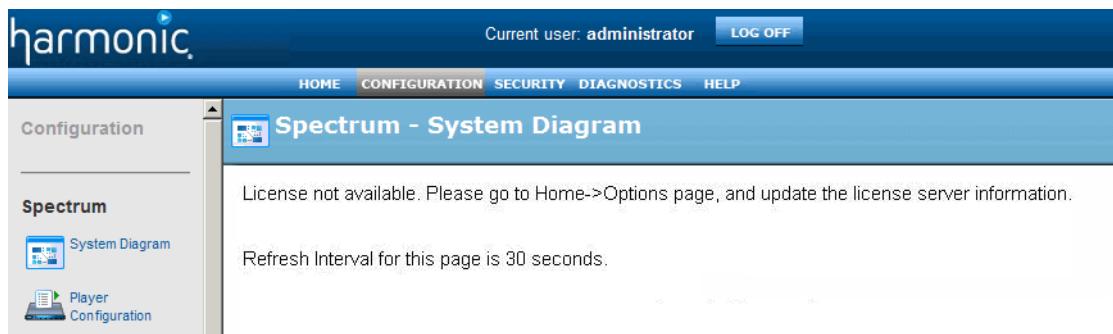
4. Click the **Login** button to display the **Enter Network Password** dialog.
  - Enter the User Name: Administrator
  - Enter the password (case sensitive): omneon
5. Click **OK** to display the **Configuration** tab. The **Spectrum - System Diagram** page is displayed by default (*Figure 1–2*).



**Figure 1–2: Spectrum – System Diagram**

For information on the Spectrum System Diagram, refer to [Viewing the Components of a Spectrum System](#).

If a valid SystemManager License file is not installed and available for the SystemManager, the application is inoperable. [Figure 1–3](#) shows the message that displays on the user interface:



**Figure 1–3: License Not Available Message**

Refer to “Obtaining and Installing a SystemManager License File” and “Configuring FLEXIm License Server Data” in the *Harmonic SystemManager Installation Guide* instructions.

## About the SystemManager Database and File Details

This section provides information about three database parameters.

### ■ Database Filename and Location

The SystemManager's database is saved by default every two minutes to the **D:\Omneon\manager\omdb** directory. The database filename is **manager.oda**. The user can change the filename by editing the **D:\Omneon\apache\conf\httpd.conf** configuration file and changing:

```
OmneonManagerDatabasePath "D:\Omneon/manager/omdb/manager"
```

Note that the line includes the filename but without any extension. The SystemManager will automatically add **".oda"** to the filename.

### ■ Database Backup Location

The database is backed up by default every 20 minutes to the **D:\BackupOmdb** directory. The backup filename is always the same as the original saved database. The user can change the backup directory by editing the **D:\Omneon\apache\conf\httpd.conf** configuration file, and changing:

```
OmneonManagerDatabaseBackupPath "D:/ Backupomdb/manager"
```

This line contains the directory name and the filename, without any extension.

### ■ Upgrade Directory Location

An additional line in the configuration file can be modified by the user:

```
OmneonManagerUpgradesPath "D:/Upgrades"
```

This line specifies where the SystemManager looks to find firmware upgrade files.

When making changes to the **httpd.conf** file, the user should shut down the SystemManager before editing the file. The SystemManager will use the new settings when it starts the next time.



**NOTE:** Harmonic recommends that you leave the settings for the "Save" directory and filename, and the "Upgrade" directory as they are. However, if you have a central server which your Information Systems department archives on a regular basis, Harmonic recommends that you mount a shared drive from your central server on the SystemManager platform, and then modify the SystemManager's "Backup" directory path to point to the mounted share. This ensures that the database is archived on a regular basis.

---

## Setting the Discovery Interval

The **Discovery Interval** determines how often the SystemManager sends out an Ethernet broadcast to find newly connected Harmonic devices. You may wish to increase the interval or completely disable device "discovery" in order to reduce packet traffic on your Ethernet by setting the interval to 0. Disabling device discovery will prevent the SystemManager from finding Harmonic devices. This may be of benefit in some circumstances (for example, when running multiple SystemManagers). Note that when device discovery is disabled, SystemManager will still discover Omneon MediaGrid clusters and Spectrum extended file systems (EFS).

### To set the Discovery Interval:

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Under **Device Auto-Discovery Configuration**, click in the **Discovery Interval** field and enter the desired value (in seconds). Values include **0** (discovery off) or between **3** and **86400** (24 hours). The default value is 30 seconds.

**Device Auto-Discovery Configuration**

<b>Discovery Interval</b>	<input type="text" value="30"/> seconds	(range: 0 or 3 to 86400)
---------------------------	---	--------------------------

When the Discovery Interval is set to 0, auto device discovery on the same subnet is disabled.

- Click **Update** at the bottom of the page to accept the new value.



**NOTE:** If the SystemManager is having trouble discovering or connecting to devices and the devices seem to be working correctly otherwise, try closing the Internet Explorer window and starting a new one. If the problem continues, stop the SystemManager in the Services window, then restart it.

## Setting the Database Configuration

Two settings determine how often the SystemManager saves the database, and how often the database is backed up.

**To set the Database Configuration:**

- From the **Home** tab, click the **Options** icon to display the **Options** page.
- To change the database save interval, under **Database Configuration**, click in the **Save Interval** field and enter the desired value (in minutes). Values range from 2 minutes to 1440 minutes (24 hours).
- To change the database backup interval, under **Database Configuration**, click in the **Backup Interval** field and enter the desired value (from 2 to 1440).

**Database Configuration**

<b>Save Interval</b>	<input type="text" value="2"/> minutes	(range: 2 to 1440)
<b>Backup Interval</b>	<input type="text" value="20"/> minutes	(range: 2 to 1440)

- Click **Update** at the bottom of the page to accept the new values.

## Setting the Facility Name

This setting determines the facility name that appears at the top headers of the SystemManager pages, and also identifies the system when being accessed remotely for technical support functions:

**To set the Facility Name:**

- From the **Home** tab, click the **Options** icon to display the **Options** page.
- Under the heading **Miscellaneous Parameters** click in the text box following the label **Facility Name**.
- Type in your desired facility name.
- Click **Update** at the bottom of the page. In order to view the new facility name setting, you must log off of the SystemManager and then log back in.

## Monitoring Hot Spares

**To enable or disable the monitoring of hot spares on RAID sets:**

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Scroll down to the **Monitor Hotspare** field and configure as follows:
  - **Enable:** Select to specify that an alarm is reported when a RAID set first loses a hotspare.
  - **Disable:** Select if you do not have hotspares for RAID sets.



**IMPORTANT:** Harmonic strongly recommends you upgrade to systems with hotspares. Contact Technical Support for upgrade information.

---

Note the following important points:

- When upgrading to a new version of the SystemManager application software, Monitor Hotspare is *disabled by default* if a SystemManager database (Manager.oda) is detected on system startup.
  - If the SystemManager database (Manager.oda) is renamed, or for all new systems, Monitor Hotspare is *enabled by default*.
3. Click **Update** to accept the new setting.

## Setting the GUI Refresh Interval

This feature allows you to specify how frequently the GUI is refreshed with new information. Setting a longer refresh interval is useful for slow network connections when the default interval of 30 seconds is too short.

**To set the GUI Refresh Interval:**

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. In the **Miscellaneous Parameters** section, scroll to **GUI Refresh Interval** and enter a value in seconds from **10** to **86400** (24 hours).
3. Click **Update** to save the new setting.

## Controlling Track Tags on Players

This setting controls whether you are allowed to set track tags on any Player. The default state is for the track tags to be enabled.

**To regulate the use of track tags on Players:**

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Under the **Player Parameters** heading, locate the **Player Track Tagging** field and configure as follows:
  - Enable:** Select to allow track tags on Players.
  - Disable:** Select to disallow track tags on Players. Track tag configuration controls no longer appear on the Edit Player page, however, you can still edit the Track Tag file from the Edit Player Track Tags page.
3. Click **Update** at the bottom of the page to accept the new setting.

## Configuring the Player Resource Check

The player resource check makes sure that there is sufficient bandwidth available whenever a player is activated. This check is enabled by default.



**CAUTION:** The steps in this section should only be performed if you are setting up automation control of players. If you wish to configure your system for automation control of players, contact Technical Support for assistance.



**CAUTION:** When the Player Resource Check is disabled, SystemManager will not verify whether there is sufficient bandwidth before activating a player.

### To configure the Player Resource Check:

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Under the **Player Parameters** heading, locate the **Player Resource Safety Checking** field and configure as follows:
  - Enable:** Select to enable player resource checking (default state).
  - Disable:** Select to disable player resource checking. If **Disable** is selected, the following message appears.



3. Click **OK**.
4. Click **Update** at the bottom of the page to accept the new setting.

## Configuring Player Case Sensitivity

Player case sensitivity is disabled by default, which means that when you attempt to play a clip with an extension in either lower case (for example, .mov or .mxf) or upper case (for example, MOV or .MXF), the player will be able to find and open the clip.

If player case sensitivity is disabled, a player will ONLY be able to find clips with lower case extensions (for example, .mov or .mxf).



**IMPORTANT:** Harmonic recommends that you leave the default setting.

### To configure the Player Case Sensitivity:

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Under the **Player Parameters** heading, locate the **Player Case Sensitivity** field and configure as follows:
  - Enable:** Select to enable player case sensitivity.
  - Disable:** Select to disable player case sensitivity (default).

The change will take affect once the affected player is activated. If the player is already activated, it must be deactivated and then activated again.

## Configuring Players to Stop Recording When the Disk Is Full

By default, the players in a Spectrum system will continue to record regardless of whether there is available disk space. For Spectrum systems running Spectrum version 6.4.2, you may change the default behavior so that players stop recording when there is no available disk space.

Follow the procedure in this section to change the behavior for all players in your system created with SystemManager 5.23 and Spectrum 6.4.2. For existing players created prior to SystemManager 5.23 and Spectrum 6.4.2, use the **Stop recording when disk is full** checkbox on the Edit Player page. See [Creating a Player](#) for details.

**To configure players to stop when there is no disk space:**

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Under the **Player Parameters** heading, locate the **Stop recording when disk is full** field and configure as follows:
  - Enable:** Select if you wish players to stop recording when there is no disk space.
  - Disable:** Select to allow players to continue recording even when there is no disk space (default).

The change will take affect once the affected player is activated. If the player is already activated, it must be deactivated and then activated again.

## Configuring Players to Stop Recording When an Input Error Occurs

By default, the players in a Spectrum system will continue to record regardless of errors with the input SDI video signal (for example, if the signal becomes corrupted or if an SDI cable is disconnected). For systems running Spectrum version 6.4.2, you may change the default behavior so that players stop recording when there is an SDI video input error.

Follow the procedure in this section to change the behavior for all players in your system created with SystemManager 5.23 and Spectrum 6.4.2. For existing players created prior to SystemManager 5.23 and Spectrum 6.4.2, use the **Stop recording when Input error occurs** checkbox on the Edit Player page. See [Creating a Player](#) for details.

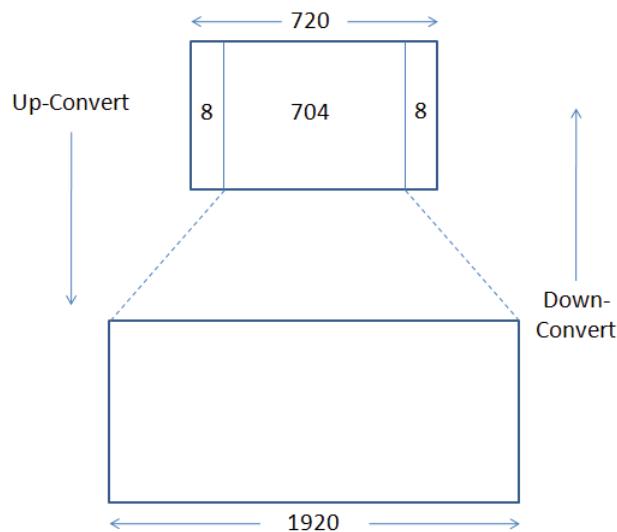
**To configure players to stop when there is an input error:**

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Under the **Player Parameters** heading, locate the **Stop recording when input error occurs** field and configure as follows:
  - Enable:** Select if you wish players to stop recording when there is an input error.
  - Disable:** Select to allow players to continue recording even when an input error occurs (default).

The change will take affect once the affected player is activated. If the player is already activated, it must be deactivated and then activated again.

## Configuring Players to Use 704 Up/Down Conversion By Default

By default, the Spectrum down-converter scales 576i video to an output width of 720 samples. With Spectrum 7.1 and later, and SystemManager 5.24 and later, you may change the default setting for new players attached to a MediaPort 7000 series or ChannelPort so they are configured to up-convert or down-convert video to 704 samples wide as shown in [Figure 1-4](#).



**Figure 1–4: New up-convert and down-convert options**

This diagram also shows that Spectrum supports 8 black samples on each side of the screen, resulting in a picture width of 704 samples. Note that this option applies only to video with a frame rate of 25 Hz.

**To configure new players to use 704 Up/Down conversion by default:**

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Under the **Player Parameters** heading, locate the **Use 704 Up/Down Conversion** field and configure as follows:
  - Enable:** When selected, the Edit Player page for any new player that is configured to Play Only or Play and Record, configured to 25 Hz, and is attached to a MediaPort 7000 series or ChannelPort that supports up/down conversion will display a selected checkbox for **Use 704 Up/Down Conversion**.
  - Disable:** When selected, players will continue to use the default of 720 samples for up/down conversion (default). For players that meet the conditions described in the previous bullet, the Edit Player page will display the **Use 704 Up/Down Conversion** checkbox, but it will be de-selected by default.
3. On the **Edit Player** page, make sure **Mode** is set to **Play Only** or **Play and Record**. Make sure the **Frame Rate** is set to **25 Hz**. And make sure the player is attached to a MediaPort 7000 series or ChannelPort that supports up/down conversion.
4. The **Use 704 Up/Down Conversion** checkbox will be selected by default, as shown in [Figure 1–5](#).

<b>Name</b>	p7301
<b>Last Message</b>	Wed:13:22:03: No destination devices specified.
<b>Mode</b>	Play Only
<b>Frame Rate (Hz)</b>	25
<b>Control</b>	Manual
<b>Playback Timecode Source</b>	From Clip
<b>Last Frame Freeze</b>	0 frames.
<b>EE Mode</b>	Normal
<b>Media Wrapper Format</b>	QuickTime (Reference)
<b>Default Clip Directory</b>	
<b>Use 704 Up/Down Conversion</b>	<input checked="" type="checkbox"/>
<b>Track 1: MPEG-2</b>	Devices: MIP-7301 01997 (Port: A, LTC & VITC output (14, 16))

Figure 1–5: Use 704 Up/Down Conversion on the Edit Player Page



**NOTE:** The change will take affect once the affected player is activated and enabled. If the player is already activated, it must be deactivated and then activated again.

## Configuring Players to Ignore RP186 (Chroma LSB) AFD

In some cases, you may want your Spectrum system to ignore RP186 (chroma LSB) AFD values resulting from recorded chroma noise. With Spectrum 7.2 and later, and SystemManager 5.25 and later, you may change the default setting for new players attached to a MediaPort or ChannelPort so that RP186 (chroma LSB) AFD values are ignored. This setting does not ignore the AFD bits that come from data packets elsewhere in the file.

### To configure players to ignore RP186 (chroma LSB) AFD values:

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Under the **Player Parameters** heading, locate the **Ignore clip RP-186 AFD** field and configure as follows:
  - ❑ **Enable:** When selected, the Edit Player page for any new player that is configured to Play Only or Play and Record will display a selected checkbox for **Ignore clip RP-186 AFD**.
  - ❑ **Disable:** When selected, players will continue to play RP186 (chroma LSB) AFD values. For Play Only or Play and Record players, the Edit Player page will display the **Ignore clip RP-186 AFD** checkbox, but it will be de-selected by default.
3. On the **Edit Player** page, make sure **Mode** is set to **Play Only** or **Play and Record**.
4. The **Ignore clip RP-186 AFD** field checkbox will be selected by default, as shown in [Figure 1–6](#).

Name	test
Last Message	Tue:14:09:35: No destination devices specified.
Mode	Play Only
Frame Rate (Hz)	29.97
Control	Manual
Timecode display	Drop Frame
Playback Timecode Source	From Clip
Last Frame Freeze	0 frames.
EE Mode	Normal
Media Wrapper Format	QuickTime (Reference)
Default Clip Directory	/fs0/clip.dir
Ignore clip RP-186 AFD	<input checked="" type="checkbox"/>
Frame Still	<input type="checkbox"/>
Subtitle Handling	Disable Conversion/Insertion
Track 1: MPEG-2	Devices: <a href="#">MIP-7301_01997 (Port: A, LTC &amp; VITC output (14, 16))</a>

Figure 1–6: Ignore clip RP-186 on the Edit Player Page

## Setting E-mail Alarm Notifications

This procedure sets up processes only for those users that specifically request e-mail notification (on the **View Alarms** page). It is also recommended that you consult with your System Administrator for details on IP addresses and SMTP servers and authentication.

Note that the alarm filter settings in SystemManager apply only to the user that sets them. If you add a new user, make sure that the new user logs in to SystemManager and sets the desired alarm filters. For instructions, see [Filtering Alarms](#).



**NOTE:** If a user does not set an appropriate alarm filter level or if the filter level is off, and the **Send email notifications to all users?** setting on the **Options** page is set to **yes**, the user will receive email notifications for ALL alarms.

### To set e-mail alarm notification for all users:

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Scroll to the **Email Notification of Alarms** section of the page.
3. In the **Send email notifications to all users?** drop-down box, select **Yes**.
4. In the **SMTP Server** field, enter the IP address or server name of your facility's mail server.
5. In the **Reply Address** field, enter the user name which the SystemManager should place in the "from" field of any e-mail notification.
6. If your facility requires SMTP (Simple Mail Transport Protocol) authentication, in the **Use SMTP server Authentication?** drop-down box, select **Yes**. Consult with your System Administrator for SMTP details.
7. Click the **Update** button located below the Email section.
8. If you selected **No** for SMTP authentication, please continue with step 13. If you selected **Yes** and clicked the **Update** button, a new group of **SMTP Authentication** fields appears at the bottom of the page. Please continue with step 9.
9. In the **SMTP User** field, enter a user name given to you by your System Administrator. This user name is the account that the SystemManager will use when sending e-mail notification.
10. In the **Password** field, enter the associated password for the account.
11. Confirm the password in the **Confirm Password** field.

12. Click the **Update** button below the **SMTP Authentication** fields.
  13. Click the **Security** tab, click the **Modify** button adjacent to your user name, and then set up your individual e-mail address on the **Modify User Settings** page. Refer to [Modifying Users](#) for instructions.
  14. Click the **Diagnostics** tab, and then click the **View Alarms** con in the left hand column to access the **View Alarms** page, and set up the type of e-mail notification that you want. Refer to [Filtering Alarms](#) for instructions.
  15. Click the **Home** tab to display the **Options** page.
  16. Click the **Send Test Email/Trap** button at the bottom of the page to send a test message to the e-mail address of the currently logged in user. If an e-mail message is not received within a few minutes, check the settings that you have entered in the previous steps.
- Note the following:
- You must provide a valid SMTP server value and a Reply Address in the form "abc@wxy.zzz" as in mgrReplies@domain.com.
  - Before sending test e-mails, you must first designate the destination e-mail address for one or more users using the **Modify** button on the **View/Edit/Delete Users** page under the **Security** tab.
17. Repeat steps 13 and 14 for each user.

The SystemManager now has the appropriate information to send e-mails, if the proper settings are entered on the **Modify User Settings** and **View Alarms** pages. The e-mail setup procedure only needs to be performed once. If new users are added, steps 13 and 14 should be performed.

## Changing Firmware Version Source Files

This function allows you to select a particular *directory* from which firmware upgrade (source) files will be selected. The selection does *not* perform the upgrade — that function is performed on a device's individual **Properties** page or on the global **Upgrade Firmware** page.

### To change the firmware version upgrade files for a Spectrum System and/or a ProBrowse System:

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Click the **Firmware Selection** icon in the left-hand column to display the **Firmware Version Selection** page.
3. Click the radio button for the desired firmware version. The red check mark indicates the selected version.
4. When the confirmation dialog appears, click **OK** to accept.
5. Perform the upgrades on the global **Upgrade Firmware** page. For Spectrum devices, you can also use the **Upgrade Firmware** button on the device's **Properties** page.

Refer to "Upgrading Spectrum Firmware" in the *Spectrum System Installation and Hardware Reference Guide* for instructions.

## Logging off the SystemManager

### To log off from the SystemManager:

1. From any SystemManager page, click the **Log Off** button (at the top of the application window) to display the **Log Off Confirmation** page. A dialog appears, asking you to confirm closing the browser window.
2. Click **Yes** to complete the log off procedure and close the browser window.



**NOTE:** If you do not click Yes, the browser window remains open and you will still be logged on to the SystemManager.

# Chapter 2

## SystemManager Advanced Configuration

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This chapter provides advanced configuration and operation instructions for the SystemManager application. Choose from the following topics:

- [\*About SNMP Support\*](#)
- [\*Setting up the Manager Proxy Agent\*](#)
- [\*Setting up ProBrowse SNMP Agents\*](#)
- [\*Setting up Omneon MediaGrid SNMP Agents\*](#)
- [\*Setting up Alarm Notification using SNMP Traps\*](#)
- [\*About SystemManager Alarm Status Colors\*](#)
- [\*About Troubleshooting SNMP Queries\*](#)
- [\*Monitoring Spectrum System Components using SNMP\*](#)
- [\*Monitoring Omneon ProBrowse, ProXchange, and Omneon MediaGrid Components using SNMP\*](#)
- [\*About SystemManager Proxy Agent MIB Content\*](#)
- [\*About Configuring a Hot Standby SystemManager\*](#)
- [\*Configuring a Hot Standby SystemManager with the NSM-2012/NSM-2012SW\*](#)
- [\*Configuring a Hot Standby SystemManager with the NSM-2007/NSM-2007SW\*](#)
- [\*Returning the Primary SystemManager to Operation\*](#)
- [\*Upgrading or Re-Installing Software on the Primary or Backup SystemManager\*](#)
- [\*Configuring Two SystemManager Platforms on the Same Subnet\*](#)
- [\*About Environment Variables\*](#)



**NOTE:** The procedures outlined in this section are written for qualified technical personnel, skilled at advanced networking procedures. If you have any questions, please consult with your facility's Information Service staff or contact Technical Support.

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### About SNMP Support

SNMP support allows you to monitor components in a Spectrum System including MediaDirectors, MediaStores, MediaPorts, Players (within MediaDirectors); components in an Omneon ProBrowse System including ProBrowse Servers and ProBrowse Generators; and components in an Omneon MediaGrid including ContentServers, ContentDirectors, ContentBridges, and Network Switches using third-party SNMP (Simple Network Management Protocol) managers.

Harmonic SNMP support consists of:

- SNMP Agents on Omneon MediaGrid, ProBrowse, and ProXchange systems, and Network Switches
- SystemManager Proxy Agent
- SNMP integration into enterprise/workgroup SNMP Managers
- SNMP Trap notification for SystemManager Alarms

- SNMP MIBs for monitoring of SNMP Agents

### Manager Proxy Agent

In a Spectrum System, MediaDirectors and MediaPorts do not run SNMP agents. Instead, the SNMP Service on the SystemManager acts as an SNMP proxy agent for the rest of the Spectrum system, summarizing and distilling key information about the network. The proxy agent is a subagent of the Microsoft SNMP agent. Refer to [Setting up the Manager Proxy Agent](#) for additional information.

### ProBrowse SNMP Agents

The ProBrowse SNMP agents are based on the open source package NET-SNMP (<http://www.net-snmp.org>). The ProBrowse Server SNMP agent also utilizes Dell OpenManage Server Assistant, which works with NET-SNMP to provide additional management features (<http://www.dell.com>). The ProBrowse SNMP agents provide a rich set of information about the system, network, and storage of the ProBrowse components. Refer to [Setting up ProBrowse SNMP Agents](#) for additional information.

### Omneon MediaGrid SNMP Agents

The Omneon MediaGrid SNMP agents are based on the open source package NET-SNMP (<http://www.net-snmp.org>). The SNMP agent also utilizes Dell OpenManage Server Assistant, which works with NET-SNMP to provide additional management features (<http://www.dell.com>). OpenManage provides the ability to monitor the power supplies and RAID arrays on the ContentDirectors using the SystemManager application. Refer to [Setting up Omneon MediaGrid SNMP Agents](#) for additional information.

### SNMP Integration into Enterprise/Workgroup SNMP Managers

These features also enable the use of enterprise/workgroup network management products to monitor additional aspects of Harmonic equipment.

The SystemManager monitors the state of Harmonic equipment by communicating on a regular basis with each MediaDirector, ProBrowse Server, ProBrowse Generator, and ProXchange server. As the SystemManager detects changes and items of interest, it posts alarms to internal queues. The Alarm List UI feature allows active monitoring of such alarms with options for filtering. In addition, the SystemManager allows you to send alarm notifications to e-mail addresses to send alarms as SNMP traps to enterprise/workgroup SNMP managers.

### Omneon Manager MIBs

If you have HP OpenView or a similar product, you can load Omneon MIBs (omneon.mib and omneon-trap.mib) to enable OpenView's discovery to distinguish the Generators from other systems in the network. The SystemManager appears as a Windows PC but can be modified in OpenView so it can be distinguished from other PCs (see Registration section of omneon.mib). By loading MIBs, you can also view SystemManager alarms through OpenView's Event Browser. The Trap MIB includes hooks to help OpenView display the traps concisely with SNMP varbinds decoded.

### Omneon ProBrowse MIBs

The NET-SNMP and Dell OpenManage MIBs can also be loaded into third-party managers and used for monitoring system, network, and storage components. An extensive array of information is available. Third party tools like MRTG can also be used to monitor performance aspects of these systems.

### Omneon MediaGrid MIBs

The NET-SNMP and Dell OpenManage MIBs can also be loaded into third-party managers and used for monitoring system, network, and storage components.

Omneon-mds.mib and omneon-ss.mib show the Harmonic SNMP extensions for the ContentDirector (MDS) and ContentServer (SS). Queries for MIB data in the ContentDirector MIB should be sent to ContentDirectors only (similarly for the ContentServer MIB data).

## Setting up the Manager Proxy Agent

When you install the SystemManager application, SNMP and Manager services are installed and set to start automatically on reboot of the SystemManager Platform for Spectrum Systems, on ProBrowse and ProXchange Systems, and the Omneon MediaGrid.

In a Spectrum System, by default, the SNMP community string for reading information is “public” and can be changed using the **Control Panel**. Typically with a Microsoft SNMP agent, no write community string is configured. Refer to *Windows 2000* documentation for more information on community strings.

In Omneon ProBrowse, ProXchange, and Omneon MediaGrid Systems, the SNMP community string for reading information is “omneon”. A read/write community string is not configured on these systems.

## Setting up ProBrowse SNMP Agents

The SystemManager automatically registers its own IP address as a trap destination for SNMP traps sent by ProXchange, ProBrowse, and Omneon MediaGrid SNMP agents. This allows the SystemManager to integrate such traps into the Manager Alarm list. As an extension of the Alarm notification feature, Manager alarms for important ProBrowse traps can then be sent to enterprise/workgroup managers in the form of SNMP traps, as well as in the form of e-mails to system administrators.



**NOTE:** Traps sent to the SystemManager by ProBrowse are converted into alarms that display as warning alarms (yellow), rather than informational alarms (blue). By default, warning alarms display in the Manager Alarm list; informational alarms do not.

## Setting up Omneon MediaGrid SNMP Agents

The NET-SNMP agent is configured to start automatically on ContentServers and ContentDirectors. The agents are configured with the string “omneon” as the read only community string. A read/write community string is not enabled on Omneon MediaGrid systems.

The SystemManager automatically registers its own IP address as a trap destination for SNMP traps sent by Omneon MediaGrid SNMP agents. This allows the SystemManager to integrate such traps into the Manager Alarm list. As an extension of the Alarm notification feature, Manager alarms for important Omneon MediaGrid traps can then be sent to enterprise/workgroup managers in the form of SNMP traps, as well as in the form of e-mails to system administrators.



**NOTE:** Traps sent to the SystemManager by Omneon MediaGrid are converted into alarms that display as warning alarms (yellow), rather than informational alarms (blue). By default, warning alarms display in the Manager Alarm list; informational alarms do not.

## Setting up Alarm Notification using SNMP Traps

SystemManager alarms can be sent to enterprise/workgroup managers to enable the use of NMS platform tools for analyzing alarms. The first step is to load omneon.mib and omneon-trap.mib into the NMS software. For HP OpenView, this option is the Load/Unload MIBs menu item. Load omneon.mib first, followed by omneon-trap.mib. These MIB files and others are found in the D:\Omneon\manager\mibs directory on the SystemManager Platform Refer to [Monitoring Omneon ProBrowse, ProXchange, and Omneon MediaGrid Components using SNMP](#) for a list of the mib files.

The second step is to enable trap sending for Manager alarms and to place the IP address of the enterprise/workgroup manager pc in the trap destination list on the **Options** page. Use the **Send Test Email/Trap** button to send out a test trap (and e-mail if so configured). Then verify the trap was received on the third party NMS system. For HP OpenView, use the Event Browser application, and search for the most recently received traps. HP OpenView decodes the SNMP trap into text that looks similar to the Manager Alarm list.

## About SystemManager Alarm Status Colors

SystemManager alarms sometimes use a single alarm type for both bad news and good news. In the SystemManager Alarm List, the default level will cause it to display as warning (yellow), error (orange), or critical (red) for the bad news occurrence of the alarm. A non-default severity will be used to display it as informational (blue) for good news (the resolution of an issue). Alarms which use this model do not display with the good new (blue) color in HP OpenView. To deal with this issue, the varbinds include the actual severity, and this is displayed in the Event Browser. So, while the bad news occurrence might display as orange with the string FAIL (for example), the good news occurrence still displays as orange but with the string INFO to show the issue has resolved.

## About Troubleshooting SNMP Queries

If SNMP queries fail, refer to the following checklist for basic troubleshooting guidance:

- Verify that the correct read community string is being used, and that the right IP Address is being used.
- For the Manager Proxy Agent (SystemManager Platform), the read community string is "public". For the ProBrowse SNMP agents, the community string is "omneon".
- Verify (using a tool like PING) that the SystemManager Platform is reachable on the network.
- On the SystemManager Platform:
  - Verify (from **Settings > Control Panel > Administrative Tools > Services** or using the "net start" command) that the SNMP Service is running.
  - Be sure that it is the SNMP Service that is running, not the SNMP Trap Service.
  - Verify that the SystemManager service is running.
  - Look for any unexpected SNMP messages in the Event Viewer. When the SNMP Service is started (for example when you boot up), the following message is added to the System Event Log: "The SNMP Service has started successfully."

## Monitoring Spectrum System Components using SNMP



**NOTE:** Many third-party SNMP monitoring tools are available; please refer to your individual tool's documentation for specific instructions.

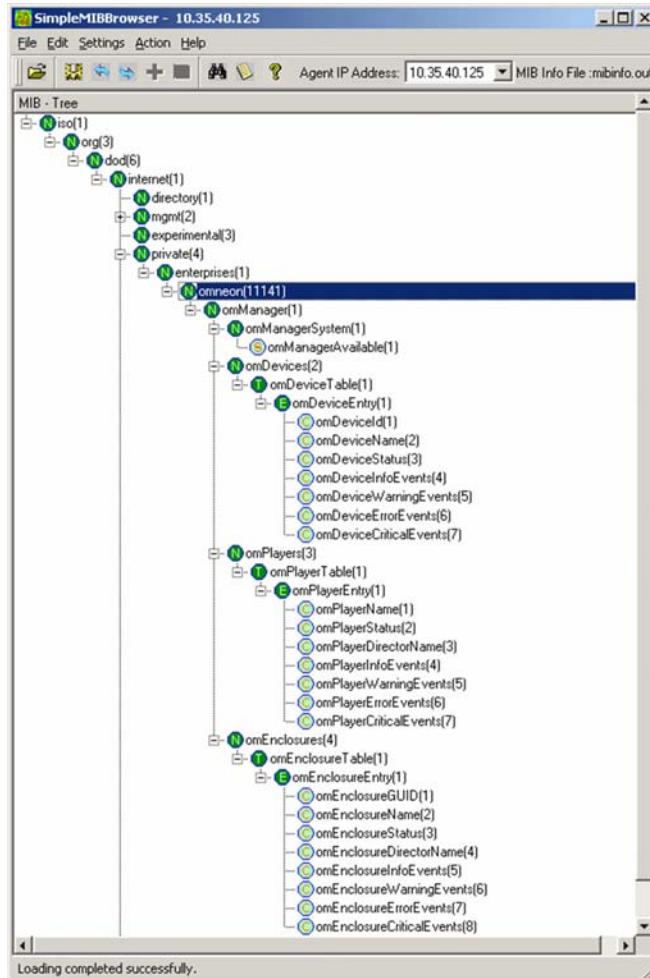
**To monitor components using SNMP:**

1. Import and compile the Omneon MIB (Management Information Block) file into your third-party SNMP monitoring tool.

On the SystemManager Platform, this file may be found in the directory  
**D:\Omneon\manager\mibs.**

Note the following:

- Omneon MIB objects are located in the overall tree of MIB definitions, at 1.3.6.1.4.1.11141, where 11141 is the enterprise number for Omneon products as shown in the figure below.
- A MIB is an object or set of objects that represent various types of information about a device (*Figure 2-1*), used by Simple Network Management Protocol (SNMP) to manage the device. Omneon MIB objects are not configurable and do not send SNMP traps (messages) to SNMP managers.



**Figure 2-1: MIB Browser Window**

2. Enter the SystemManager's IP address in your third-party SNMP monitoring tool. This allows you to monitor the SystemManager's status.

3. Within the SystemManager's MIB, the status of devices, enclosures (MediaStores), and Players is carried as MIB values and displayed in tabular format. Refer to [About SystemManager Proxy Agent MIB Content](#) for more information on the tabular displays.

Note the following:

- By setting up individual values in your monitoring tool (based on the Omneon MIB), you can monitor the status of devices, enclosures (MediaStores), and Players. Refer to your monitoring tool documentation for more information.
- Information on all devices and players is proxied through the SystemManager, so use the SystemManager Platform's IP address (not those of any MediaDirector host). Thus, you can configure the SNMP monitoring tool such that when a state change occurs for an active enclosure (MediaStore) for example, an alarm is generated.
- Each host of a MediaDirector shows up as a separate device in third party NMS products. Since they do not implement SNMP agents, third party products find them using PING (ICMP) and do not get information to show they are part of the same system.
- Keep in mind that this feature provides monitoring capabilities only. It does not allow control.



**NOTE:** For Network Management Services integration purposes, Harmonic provides an Omneon logo file in.bmp format. This can be found at D:\Omneon\manager\icons.

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## Monitoring Omneon ProBrowse, ProXchange, and Omneon MediaGrid Components using SNMP



**NOTE:** Many third-party SNMP monitoring tools are available; please refer to your individual tool's documentation for specific instructions.

---

### To monitor components using SNMP:

1. Navigate to: **D:\Omneon\manager\mibs** and import and compile the following Management Information Blocks (MIBs) and associated files:
  - **For ProBrowse and Omneon MediaGrid:**
    - omneon.mib
    - omneon-trap.mib
    - net-snmp-mibs
    - omsa-mibs
    - omneon-mds.mib
    - omneon-ss.mib
  - **For ProXchange:**
    - omneon.mib
    - omneon-trap.mib
    - net-snmp-mibs
    - omsa-mibs
  - **For Omneon MediaGrid only:**
    - procurve-mibs
    - omneon-mds.mib
    - omneon-ss.mib

2. In your third-party SNMP monitoring tool, enter the SystemManager's IP address of each of the ProBrowse or Omneon MediaGrid components you wish to monitor.

Refer to your SNMP monitoring tools documentation for additional information.

## About SystemManager Proxy Agent MIB Content

The following tables display data for SystemManager Platforms monitoring MediaDirectors, MediaStores, MediaPorts, and Players (within MediaDirectors) in a Spectrum system.

- *OmDeviceTable*
- *OmPlayerTable*
- *OmEnclosureTable*
- In addition, *OmManagerAvailable MIB Object* provides information on SystemManager Platform availability. This scalar MIB object can be used to find out if the Manager service is running. If not then the three tables that follow will be reported as empty.

The following tables display data for SystemManager Platforms monitoring ContentServers and ContentDirectors in an Omneon MediaGrid:

- OmSliceServerTable
- OmMetadataServerTable

Consult your SNMP Monitoring tool documentation for information on how to access the MIB tables.

### **OmDeviceTable**

*Figure 2-2* is an example of an **OmDeviceTable** showing the devices (MediaDirectors and MediaPorts) registered with the SystemManager.

Instance	omDeviceId	omDeviceName	omDeviceStatus	omDeviceInfoEvents	omDeviceWarningEvents	omDeviceErrorEvents	omDeviceCriticalEvents
6	5.48.49.48.48.57	01009 MP03_01009	devOkay(1)	0	0	0	0
7	5.48.49.48.50.57	01029 MP01_01029	devOkay(1)	0	0	0	0
8	5.48.49.48.57.51	01093 MP02_01093	devOkay(1)	0	0	1	0
9	5.48.49.49.54.50	01162 MP01_01162	devOkay(1)	0	0	1	0
10	5.48.49.49.54.51	01163 MP01_01163	devOkay(1)	0	0	0	0
11	5.48.49.50.48.50	01202 MP01_01202	devOkay(1)	0	0	1	0
12	5.48.49.50.50.52	01224 Dir103 / Dir104	devOkay(1)	0	0	0	0
13	5.48.49.50.51.51	01233 MP02_01233	devOkay(1)	0	0	0	0
14	5.48.49.50.51.54	01236 Dir101 / Dir102	devOkay(1)	0	0	0	0
15	5.48.49.50.51.56	01238 Dir105 / Dir106	devOkay(1)	2	0	1	0
16	5.48.49.50.52.50	01242 MP02_01242	devOkay(1)	0	0	0	0
17	5.48.49.50.52.53	01245 MP01_01245	devOkay(1)	1	0	1	0
18	5.48.49.50.52.56	01248 MP01_01248	devOkay(1)	0	0	0	0
19	5.48.49.50.53.48	01250 MP02_01250	devOkay(1)	0	0	0	0
20	5.48.49.50.54.57	01269 MP01_01269	devOkay(1)	1	0	1	0
21	5.48.49.50.55.52	01274 MP01_01274	devOkay(1)	1	0	1	0
22	5.48.49.53.52.49	01541 MP05_01541	devOkay(1)	1	0	1	0
23	5.48.49.53.56.48	01580 MP05_01580	devOkay(1)	0	0	1	0
24	5.48.49.54.49.54	01616 MP05_01616	devOkay(1)	1	0	1	0
25	5.48.50.51.53.56	02358 MP01_02358	devOkay(1)	0	0	0	0
26	5.48.50.55.48.48	02700 MP10_02700	devOkay(1)	1	0	1	0
27	5.48.50.55.57.48	02790 MP01_02790	devOkay(1)	1	0	1	0
28	5.48.50.56.48.49	02801 MP03_02801	devOkay(1)	1	0	1	0
29	5.48.50.56.51.55	02837 MP10_02837	devOkay(1)	0	0	1	0

**Figure 2–2: OmDeviceTable**

### OmPlayerTable

*Figure 2–3* is an example of an **OmPlayerTable** showing the Players registered with the SystemManager.

Instance	omPlayerName	omPlayerStatus	omPlayerDirectorName	omPlayerInfoEvents	omPlayerWarningEvents	omPlayerErrorEvents	omPlayerCriticalEvents
1	dv25_102_play1	plaActive(6)	Dv102	0	0	0	0
2	dv25_101_record	plaActive(6)	Dv101	0	0	0	0
3	#ame-105-play1	plaActive(6)	Dv105	0	0	0	0
4	#ame-105-play2	plaActive(6)	Dv105	0	0	0	0
5	#ame-105-play3	plaActive(6)	Dv105	0	0	0	0
6	#ame-106-play1	plaActive(6)	Dv106	0	0	0	0
7	#ame-106-play2	plaActive(6)	Dv106	0	0	0	0
8	#ame-106-play3	plaActive(6)	Dv106	0	0	0	0
9	dvcpro50-103-play2	plaActive(6)	Dv103	0	0	0	0
10	dvcpro50-103-play3	plaActive(6)	Dv103	0	0	0	0
11	dvcpro50-104-play1	plaActive(6)	Dv104	0	0	0	0
12	dvcpro50-104-play2	plaActive(6)	Dv104	0	0	0	0
13	dvcpro50-104-play3	plaActive(6)	Dv104	0	0	0	0

**Figure 2–3: OmPlayer Table**

### OmEnclosureTable

*Figure 2–4* is an example of an **OmEnclosureTable** showing the Enclosures (MediaStores) registered with the SystemManager.

Instance	onEnclosureGUID	onEnclosureName	onEnclosureStatus	onEnclosureDirectorName	onEnclosureInfoEvents	onEnclosureWarningEvents	onEnclosureErrorEvents	onEnclosureCriticalEvents
1	16.50.48.48.48.48.48.53.48.99.99.48.48.100.55.57.55	MediaStore504	encIOIay(2)	Dv101	0	0	0	0
2	16.50.48.48.48.48.48.53.48.99.99.48.48.100.55.100.50	MediaStore507	encIOIay(2)	Dv101	0	0	0	0
3	16.50.48.48.48.48.48.48.53.48.99.99.48.48.100.55.100.51	MediaStore501	encIOIay(2)	Dv101	0	0	0	0
4	16.50.48.48.48.48.48.53.48.99.99.48.48.100.55.100.57	MediaStore502	encIOIay(2)	Dv101	0	0	0	0
5	16.50.48.48.48.48.48.48.53.48.99.99.48.48.100.55.102.98	MediaStore496	encIOIay(2)	Dv101	0	0	0	0
6	16.50.48.48.48.48.48.53.48.99.99.48.48.100.56.57.101	MediaStore505	encIOIay(2)	Dv101	0	0	0	0
7	16.50.48.48.48.48.48.53.48.99.99.48.48.100.100.56.52	MediaStore500	encIOIay(2)	Dv101	0	0	0	0
8	16.50.48.48.48.48.48.53.48.99.99.48.48.100.101.101.53	MediaStore506	encIOIay(2)	Dv101	0	0	0	0
9	16.50.48.48.48.48.48.53.48.99.99.48.48.101.48.56.55	MediaStore503	encIOIay(2)	Dv101	0	0	0	0

Figure 2–4: OmEnclosure Table

**OmManagerAvailable MIB Object**

[Figure 2–5](#) is an example of the **OmManagerAvailable** object reporting that the Manager service is running and providing management information through the Manager Proxy Agent. If the Manager service is not running, this scalar MIB object will report the value notAvailable(0).

Label	Data Type	Oid	Instance	Value
1 omManagerAvailable	Integer	1.3.6.1.4.1.11141.1.1.1	0	1

Figure 2–5: OmManagerAvailable

**About Configuring a Hot Standby SystemManager**

When you configure a Hot Standby SystemManager, you specify a SystemManager Platform that can assume operations if the primary SystemManager fails. Once configured, the Hot Standby, or backup SystemManager detects the failure of a primary SystemManager, and takes over monitoring functions — using the last saved database file from the primary SystemManager. Note that this leaves a window of time, approximately 20 minutes long (depending on the backup database save interval), during which changes made on the primary SystemManager may not be reflected in the backup SystemManager.

To use this feature, you need to perform several post-installation procedures, before starting the primary and backup SystemManagers.



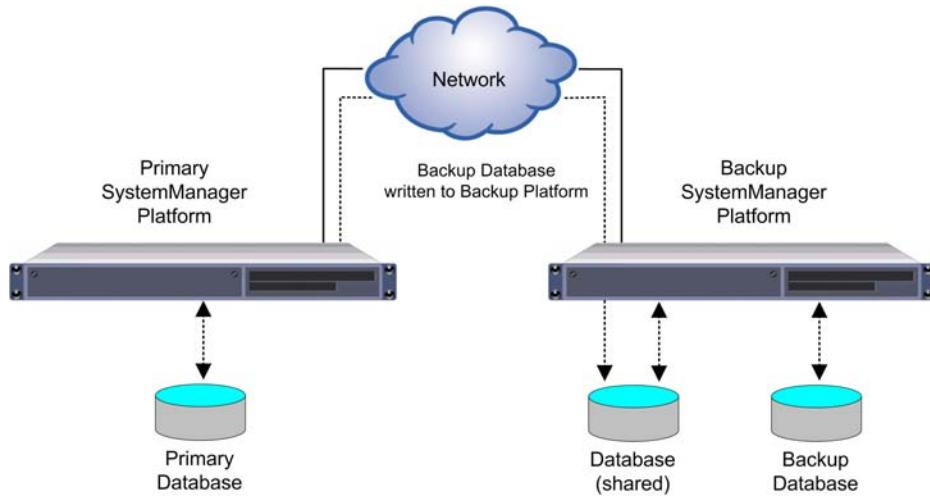
**NOTE:** Procedures relating to configuring a Hot Standby SystemManager are designed for qualified technical personnel, skilled at advanced networking procedures. If you have any questions, please consult with your facility's Information Service staff or contact Technical Support.



**NOTE:** Starting with SystemManager release 5.4, a valid license is required to operate the SystemManager application on either a SystemManager Platform or a customer-supplied PC. You will need two licenses; one for the primary SystemManager and one for the backup SystemManager. Refer to "Obtaining and Installing a SystemManager License File" in the *Harmonic SystemManager Installation Guide* for detailed instructions on obtaining and installing a license file for use on the SystemManager platform.

Two SystemManagers can be installed in a Hot Standby configuration ([Figure 2–6](#)), with one being the primary and the other being a backup. Hot Standby configurations require two elements:

- The first element is the transfer of database information from the primary to the backup. This is accomplished by mounting the database directory of the backup SystemManager on the primary SystemManager as shown in [Figure 2–6](#).



**Figure 2–6: Hot Standby Configuration**

The primary is then configured to write its backup database to the backup's disk. This ensures that when the backup takes over from the primary, it will use information from the last database backup.

- The second element is monitoring the primary to detect failures. The backup is configured to check the status of the primary. Instead of starting immediately, the backup enters standby state, where it waits until it detects a problem in the primary. If a problem is detected, the backup then completes startup and operates as a normal SystemManager.

When creating a Hot Standby configuration, Harmonic recommends that you do not use either SystemManager Platform to supply DHCP (or DNS) service. DHCP service should be supplied by your facility's IT infrastructure, and both SystemManager Platforms should be given DHCP reservations. Additionally, giving DNS names to the SystemManager Platforms will also make operations easier. DNS names for SystemManager Platforms must be unique to avoid Windows name conflicts. Recommended SystemManager Platform names (in the DHCP server) are "PrimaryMgr" and "BackupMgr".

## Configuring a Hot Standby SystemManager with the NSM-2012/NSM-2012SW

To configure a primary or backup SystemManager, you must have Administrator user privileges for the Windows OS (note that this is not related to SystemManager Administrator privileges or login name). The factory-configured user account name to access Windows on the SystemManager Platform is "**Administrator**" with "**omneon**" set as the default password.

The following procedures refer to this user account name and password. If you change the Administrator level account name or password, replace "**Administrator**" and "**omneon**" with the new account name and password.



**NOTE:** This procedure is designed for qualified technical personnel, skilled at advanced networking procedures. If you have any questions, please consult with your facility's Information Service staff or contact Technical Support.

#### To configure a Hot Standby SystemManager:

1. Install the SystemManager software on both Platforms as described in the *Harmonic SystemManager Installation Guide*. Do not start the "SystemManager" service yet on either Platform.
2. Edit the **httpd.conf** file on the primary SystemManager Platform using a text editor (such as Notepad). The file is typically in **D:\Omenon\Apache\conf\...** as follows:
  - a. Save a copy of the original httpd.conf file for future reference.
  - b. Find the line with the field **OmneonManagerDatabaseBackupPath**, which may look like: OmneonManagerDatabaseBackupPath "D:/BackupOmdb/manager"
  - c. Enter the UNC path for the manager.ODA file on the backup SystemManager in the following format:  
*\\\manager\omdb\manager*
  - d. Save the configuration file and exit the text editor.
3. On the backup SystemManager, edit the **httpd.conf** file using a text editor. As before, this file is typically in **D:\Omenon\Apache\conf\...**. Edit as follows:
  - a. Find the line with the field **OmneonManagerHotStandby**, which may look like: # OmneonManagerHotStandby "primarymgr.omneon.com"
  - b. Remove the '#' comment symbol, and modify the text in quotes to contain the DNS name or IP address of the primary SystemManager. For example: OmneonManagerHotStandby "PrimaryMgr"
  - c. Save the configuration file and exit the text editor.
4. Start the "SystemManager" service on the primary SystemManager Platform as follows:
  - a. Reboot the primary SystemManager Platform. The SystemManager and SNMP services start automatically.
  - b. Verify that the SystemManager is running by logging in.
  - c. Verify that all MediaDirectors and MediaPorts are connected and stable.
5. Start the "SystemManager" service on the backup SystemManager Platform as follows:
  - a. Reboot the backup SystemManager Platform. SystemManager and SNMP services start automatically.
  - b. Verify that the SystemManager is running in the **Hot Standby Mode** by attempting to login. At this point, attempts to log into the backup SystemManager (with Internet Explorer) will fail. This is expected.

This completes the configuration procedure.

## Configuring a Hot Standby SystemManager with the NSM-2007/NSM-2007SW

To configure a primary or backup SystemManager, you must have Administrator user privileges for the Windows OS (note that this is not related to SystemManager Administrator privileges or login name). The factory-configured user account name to access Windows on the SystemManager Platform is "**Administrator**" with "**omneon**" set as the default password.

The following procedures refer to this user account name and password. If you change the Administrator level account name or password, replace “Administrator” and “omneon” with the new account name and password.



**NOTE:** This procedure is designed for qualified technical personnel, skilled at advanced networking procedures. If you have any questions, please consult with your facility's Information Service staff or contact Technical Support.

### To configure a Hot Standby SystemManager:

1. Install the SystemManager software on both Platforms as described in the *Harmonic SystemManager Installation Guide*. Do *not* start the “SystemManager” service yet on either Platform.
2. Stop SNMP service on both machines as follows:
  - a. From **Start > Settings > Control Panel > Administrative Tools > Services**, right-click **SNMP**.
  - b. Click **Stop**.
3. On the backup SystemManager Platform, make the **Manager** folder shared on the network, with write access enabled as follows:
  - a. In Windows Explorer, open the directory D:\Omneon\.
  - b. Right-click the **Manager** folder and select **Sharing** from the pop-up menu. The **Sharing** dialog appears.
  - c. On the **Sharing** tab, click **Share this Folder**.
  - d. Use the default name (Manager) for the shared folder.
  - e. Click **OK** to complete the procedure.
4. For the primary SystemManager Platform, map a network drive to the shared folder on the backup SystemManager. The following steps apply to the NSM-2007 and NSM-2007SW. Map a network drive using Windows 2008, Windows 7, Windows XP or Windows 20003:
  - a. Navigate to, or create this folder if it does not already exist:  
C:\WINDOWS\system32\GroupPolicy\Machine\Scripts\Startup
  - b. Create the file **backupdevice.bat**
  - c. Do one of the following depending on your operating system:
    - For Windows 2008, Windows 7, or Windows XP, modify **backupdevice.bat** by adding the following line:  

```
net use <drive letter>: \\<IP address of backup SystemManager>\manager <password> / user:<user name>
```

      - For Windows 2003, modify **backupdevice.bat** by adding the following line:  

```
net use <drive letter>: <IP address of backup SystemManager>\manager <password> / user:<IP address of backup SystemManager>\<user name>
```
5. **If you are running Windows 2003, continue to step 6.** For all other supported versions of Windows, do the following: on the primary SystemManager Platform, modify the “SystemManager” service to run using the “Administrator” user account name and “omneon” password as follows:

- a. On the Windows desktop, launch the **Services Control Panel** by clicking on **Start > Settings > Control Panel > Administrative Tools > Services**.
  - b. In the **Services Control Panel**, search for the **SystemManager** service then click it. Click the **Action** menu, and select **Properties**, to display the **SystemManager Properties** dialog.
  - c. Click the **Log On** tab to display the **Log on as** sheet.
  - d. Click **This account** to enable the **Account** and **Password** fields.
  - e. In the **Account** and **Password** fields, enter the user name and password for your SystemManager Platform or client PC. Note that the password must be repeated in the **Confirm Password** field. For the SystemManager Platform, the factory-configured user name is “Administrator” and the password is “omneon.”
  - f. Click **OK** to close the dialog.
  - g. Close the **Services Control Panel**.
6. Edit the **httpd.conf** file on the primary SystemManager Platform using a text editor (such as Notepad). The file is typically in **D:\Omnenon\Apache\conf\...** as follows:
    - a. Save a copy of the original httpd.conf file for future reference.
    - b. Find the line with the field **OmneonManagerDatabaseBackupPath**, which may look like: OmneonManagerDatabaseBackupPath “D:/BackupOmdb/manager”
    - c. Change the line to point to the network drive as configured in step 3c. If the network drive was named “F;,” the line should be changed to read: OmneonManagerDatabaseBackupPath “F:/omdb/manager”
    - d. Save the configuration file and exit the text editor.
  7. On the backup SystemManager, edit the **httpd.conf** file using a text editor. As before, this file is typically in **D:\Omneon\Apache\conf\....** Edit as follows:
    - a. Find the line with the field **OmneonManagerHotStandby**, which may look like: # OmneonManagerHotStandby “primarymgr.omneon.com”
    - b. Remove the ‘#’ comment symbol, and modify the text in quotes to contain the DNS name or IP address of the primary SystemManager. For example: OmneonManagerHotStandby “PrimaryMgr”
    - c. Save the configuration file and exit the text editor.
  8. Start the “SystemManager” service on the primary SystemManager Platform as follows:
    - a. Reboot the primary SystemManager Platform. The SystemManager and SNMP services start automatically.
    - b. Verify that the SystemManager is running by logging in.
    - c. Verify that all MediaDirectors and MediaPorts are connected and stable.
  9. Start the “SystemManager” service on the backup SystemManager Platform as follows:
    - a. Reboot the backup SystemManager Platform. SystemManager and SNMP services start automatically.
    - b. Verify that the SystemManager is running in the **Hot Standby Mode** by attempting to login. At this point, attempts to log into the backup SystemManager (with Internet Explorer) will fail. This is expected.

This completes the configuration procedure.

## Returning the Primary SystemManager to Operation

If, for some reason, the primary SystemManager stops responding, the backup SystemManager will automatically start and provide control of your network's Harmonic devices. If a failure occurs, point your web browser to the backup SystemManager's IP address. This will allow you to use the backup to continue device configuration and monitoring.

When the issues preventing operation of the primary SystemManager are resolved, you can switch operation back to the primary SystemManager and place the backup into standby mode again.

### To return the primary SystemManager to operation:

1. Verify that the "SystemManager" service on the primary SystemManager Platform is not running. If it is running, stop the service.
2. Stop the "SystemManager" service on the backup SystemManager Platform.
3. Copy the Manager database file "**manager.oda**" from the backup SystemManager Platform to the primary SystemManager Platform. Place the file at "**D:\Omneon\Manager\Omdb\manager.oda**" on both SystemManager Platforms.
4. Start the "SystemManager" service on the primary SystemManager Platform.
5. Verify that the SystemManager application is running by logging in.
6. Any files in the backup SystemManager **D:\BackupOmdb** directory should be deleted.
7. Start the "SystemManager" service on the backup SystemManager Platform.

The primary SystemManager is now ready for use again, and the backup Platform is primed in "Hot Standby" mode, ready to take over if problems occur.

## Upgrading or Re-Installing Software on the Primary or Backup SystemManager

To upgrade or reinstall the software on either the primary or the backup SystemManager, follow these steps:

1. Before uninstalling the old software, stop the SystemManager and SNMP services *on the backup Platform first* and then on the primary Platform. This order prevents the backup Platform from taking over when the primary SystemManager services stop.

Stop the "SystemManager" service as follows:

- a. Click **Start > Settings > Control Panel > Administrative Tools > Services**.
- b. Right-click **SystemManager**.
- c. Click **Stop**.

Stop the SNMP service as follows:

- a. Click **Start > Settings > Control Panel > Administrative Tools > Services**.
- b. Right-click **SNMP**.
- c. Click **Stop**.

2. Make a copy of the "httpd.conf" file on both SystemManager Platforms. Put each copy in a separate folder, for example, "D:\Temp\".

3. Uninstall SystemManager from both SystemManager Platforms as follows:

- a. Click **Start > Settings > Control Panel > Add/Remove Programs**.
- b. Select **Omneon SystemManager**.
- c. Click **Change/Remove**. The uninstallation process starts.

- d. When a dialog appears, click **OK**.
- e. Reboot both SystemManager Platforms.
- f. Stop SNMP services on both Platforms.
4. Install new SystemManager software on both Platforms. Refer to the section, "Installing, Reinstalling, or Upgrading the SystemManager Application" in the *Harmonic SystemManager Installation Guide* or the product Release Notes for instructions.



**NOTE:** The primary and backup SystemManagers must have the same software version installed.

5. On the primary SystemManager Platform, edit the httpd.conf file using a text editor such as Notepad. This file is typically in D:\Omneon\Apache\conf\.... Do not copy the old httpd.conf file onto new installations since the template for httpd.conf changes from time to time. Edit the file as follows:
  - a. Locate the line with the field **OmneonManagerDatabaseBackupPath** which usually appears as:  
OmneonManagerDatabaseBackupPath "D:/BackupOmdb/manager"
  - b. Change the line to point to the network drive as configured in the httpd.conf file as saved from the previous version on the primary SystemManager.
  - c. Save the configuration file and exit from the text editor.
6. On the backup SystemManager Platform, edit the httpd.conf file using a text editor such as Notepad. This file is typically in D:\Omneon\Apache\conf\httpd.conf. Do not copy the old httpd.conf file onto new installations since the template for httpd.conf changes from time to time. Edit the file as follows:
  - a. Locate the line with the field **OmneonManagerHotStandby** which usually appears as:  
OmneonManagerHotStandby "primarymgr.omneon.com"
  - b. Remove the # comment symbol and modify the text to match the respective value in the httpd.conf file as saved from the previous version on the backup SystemManager.
  - c. Save the configuration file and exit from the text editor.
7. On the primary SystemManager Platform, modify the Manager service to run using the user account name "**Administrator**" and password "**omneon**" as follows:
  - a. On the Windows desktop, launch the **Service Control Panel** by clicking **Start > Settings > Control Panel > Administrative Tools > Services**.
  - b. On the **Services Control Panel**, click **SystemManager** service
  - c. From the **Action** menu, select properties to display the **SystemManager Properties** dialog.
  - d. Click the **Log On** tab to display the **Log on as** dialog.
  - e. Click **This account** to enable the **Account** and **Password** fields.
  - f. Enter the default log on user name "**Administrator**" and password "**omneon**" in the account and password fields. Reenter the password in the Confirm Password field
  - g. Click **OK** to close the dialog.
  - h. Close the **Services Control Panel**.
8. Reboot the primary SystemManager Platform.
9. Verify that the SystemManager is running by logging in. Verify that all MediaDirectors and MediaPorts are connected and stable.
10. Reboot the backup SystemManager Platform.
11. Verify that the SystemManager is running by logging in. Verify that all MediaDirectors and MediaPorts are connected and stable.

At this point attempts to log in to the backup SystemManager (with Internet Explorer) will fail. This is as expected.

The installation procedure is now complete.

## Configuring Two SystemManager Platforms on the Same Subnet

This section describes how to set up two SystemManagers on the same subnet such that each SystemManager application controls a different set of MediaDirectors, and provisions redundant DHCP service to yield fixed IP addresses for all MediaDirectors.

Normally, two SystemManagers and their associated MediaDirectors are put on unique subnets, and each SystemManager is configured by default to automatically discover all MediaDirectors and attached MediaPorts on its IP subnet. IP data transfer may then be accomplished by an IP (layer 3) switch or router between these subnets. This following procedure addresses the case where there is no such IP switch/router available.

### To configure two SystemManager Platforms on the same subnet:

1. Stop the Manager service in Windows Services on both SystemManager Platforms while performing IP configuration.
  - Configure the SystemManager Platforms to have unique IP addresses and computer names.
  - Ensure that the vDHCP server is running on the first SystemManager Platform, but turned off on the other during the setup phase.
2. Set up the vDHCP server as normal, with IP address reservations for all MediaDirectors.
  - Ensure that the subnet mask is consistent with all devices on the subnet.
  - To verify DHCP setup, delete all existing leases, reboot all MediaDirectors, and review the list of leases to ensure that all MediaDirectors are getting their DHCP leases with the reserved IP addresses.
3. Temporarily stop the vDHCP service on the first SystemManager Platform.
  - Locate the directory where the vDHCP service is installed (normally C:\Program Files\vDHCP).
  - Copy the vdhcp.ini file from this folder to the corresponding folder on the second SystemManager Platform, replacing the existing .ini file. This will ensure that both SystemManager Platforms may issue DHCP leases with identical IP reservations and other IP configuration information.
4. Start the vDHCP service on both SystemManager Platforms.
5. Start the Manager service on both SystemManager Platforms.
6. Reboot the MediaDirectors.
7. Verify that both SystemManagers correctly auto-discover all MediaDirectors.
  - Review each MediaDirector configuration page to verify that the IP address of each MediaDirector host match its vDHCP reservation.
  - If any of these do not match, it is likely that the SystemManager application discovered them while they were using a prior IP address. In such case, manually remove these MediaDirectors from the SystemManager (see below) and allow the SystemManager to automatically rediscover them at their final IP addresses.
8. Perform the following steps in the SystemManager application on each SystemManager Platform.
  - a. From the **Home** tab, click the **Options** icon to display the **Options** page.

- b. Change the **Discovery Interval** field to **0**, and then click the **Update** button. This will turn off auto device discovery.
- c. Click on the **Diagnostics** tab, then on the **Remove Device** icon on the left to display the **Remove Device** page.
- d. On the MediaDirector field, select each MediaDirector that this SystemManager should NOT control, and click the adjacent **Remove** button.
- e. After the MediaDirectors have been removed, there will be a number of "**Not Responding**" MediaPorts. Select each of them on the "**Not Responding**" field and click the adjacent **Remove** button.
- f. Click the **Configuration** tab to display the **System** diagram and verify that the correct MediaDirectors and MediaPorts are displayed.
- g. If any MediaDirectors are missing, they can be re-attached by using the **Add Device** function under the **Diagnostics** tab.

The two SystemManagers will now be controlling different MediaDirectors and will not interfere with each other. This process will NOT need to be repeated if the SystemManagers are restarted or upgraded, since the information is stored in the SystemManager database.

## About Environment Variables

SystemManager provides some advanced settings, which can be used by Technical Support for diagnostic purposes.



**IMPORTANT:** The settings on the Environment Variables page are for Technical Support only. Do not modify these settings unless directed by Technical Support.

To access the Environment Variables page, from the **Home** tab, under **Advanced**, click **Environment Variables**.

# Chapter 3

## User Management

This chapter provides configuration instructions for managing SystemManager users. Choose from the following topics:

- [Viewing Users](#)
- [Modifying Users](#)
- [Deleting Users](#)
- [Adding Users](#)

### Viewing Users

**To view system users:**

1. Click the **Security** tab to display the **View/Edit/Delete Users** page.

The screenshot shows the SystemManager interface with the 'Security' tab selected. The main content area is titled 'View/Edit/Delete Users'. It displays the following information:

- Number of Current Users: 2**
- User Group: Administrator**

User Name	Modify	Delete
Administrator	<input type="button" value="Modify"/>	<input type="button" value="Delete"/>
- User Group: User**

User Name	Modify	Delete
OmUser	<input type="button" value="Modify"/>	<input type="button" value="Delete"/>

At the bottom left, it says 'Refresh Interval for this page is 20 seconds.'

Figure 3-1: View/Edit/Delete Users

This page displays a list of all current system users, including the **Administrator**.

### Modifying Users

**To edit a system user's individual e-mail address, user group, and password:**

1. Click the **Security** tab to display the **View/Edit/Delete Users** page.
2. Click **Modify** adjacent to the user (or Administrator) name that you wish to modify. The **Modify User Setting** page appears.
3. To change the user's User Group, click the **User Group** drop-down box and select either **Administrator** or **User**.
4. To change (or enter) the user's e-mail address, type the desired e-mail address in the **Email Address** field. Click the **Update** button in the top section to accept the new address. You will now be notified of selected alarms, if e-mail notification is properly set up on the **Options** page, and the desired alarm filters are set.

Refer to [Viewing and/or Clearing Alarms](#) and [Filtering Alarms](#) for setup instructions.

5. To change a user's password, enter the old password in the **Old Password** field, type the new password in the **New Password** field, then confirm in the **Confirm Password** field. Click the **Update** button in the bottom section to complete the procedure. If the new password is accepted, you will be prompted to login again with the new password (only if you are changing the current user's password).



**NOTE:** The password used on the page is for accessing SystemManager via the SystemManager Login.

## Deleting Users



**IMPORTANT:** Harmonic recommends that you do not delete the Administrator as it is an essential user to have on a Harmonic system, most notably to send SNMP traps, if enabled. The Administrator's settings configured on the Edit Filter page control the forwarding of alarms using e-mail as well as the sending of SNMP Traps as alarms.

### To delete a user from the system:

1. Click the **Security** tab to display the **View/Edit/Delete Users** page and the view the current users.
2. Click **Delete** adjacent to the user that you wish to delete. The **Delete Confirmation** dialog box appears.
3. Click **OK** to delete the user, or **Cancel** to cancel the procedure safely, without deleting.

## Adding Users



The Add User feature creates a new user for the SystemManager application.

Note that the alarm filter settings in SystemManager apply only to the user that sets them. If you add a new user, make sure that the new user logs in to SystemManager and sets the desired alarm filters. For instructions, see [Filtering Alarms](#).

**NOTE:** If a user does not set an appropriate alarm filter level or if the filter level is off, and the **Send email notifications to all users?** setting on the **Options** page is set to **yes**, the user will receive email notifications for ALL alarms. To change the alarm notifications setting, refer to [Setting E-mail Alarm Notifications](#).

### To add a user to the system:

1. Click the **Security** tab to display the **View/Edit/Delete Users** page.
2. In the left-hand column, click the **Add User** icon to display the **Add User** page.
3. In the **User Name** field, type the name of the new user.
4. In the **Security Group** drop-down box, choose **User** or **Administrator**.
5. In the **Password** field, enter the new password. Confirm the password in the **Confirm Password** field.
6. Click **Create**. The system returns to the **View/Edit/Delete Users** page, with the new user listed.



**NOTE:** The "users" created on the Add User page are for the SystemManager application only.

# Chapter 4

## SystemManager Diagnostics Configuration

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This chapter provides operation instructions for system diagnostics. Choose from the following topics:

- [\*Viewing System Status\*](#)
- [\*Viewing System Logs\*](#)
- [\*Viewing and/or Clearing Alarms\*](#)
- [\*Filtering Alarms\*](#)
- [\*Editing Alarm Thresholds\*](#)
- [\*Connecting a Device from a Different IP Network\*](#)
- [\*Removing Devices\*](#)
- [\*Adding Custom Help and Custom Configuration Notes\*](#)
- [\*Viewing SystemManager Software Version Information\*](#)
- [\*Accessing the SystemManager Online Help System\*](#)

### Viewing System Status

On the **System Status** page you can view system status data that is used for SystemManager troubleshooting.



**NOTE:** Note that this page is designed for Technical Support use only.

---

#### To view system status:

On the **Diagnostics Tab**, click the **View System Status Icon** in the left-hand column to display the **View System Status** page as shown in [Figure 4-1](#).

The screenshot shows the SystemManager interface with the 'DIAGNOSTICS' tab selected. On the left, there's a sidebar with sections for 'System' (View System Status, View System Log), 'Alarms' (View Alarms, Edit Thresholds), and 'Device Maintenance' (Connect Device, Remove Device). The main content area is titled 'View System Status' and contains several sections of monitoring data:

- Device Discovery**: Discovery thread state: Not started.
- Monitoring for Spectrum Devices**:
 

Background2 thread state	Awake
last start time for monitoring loop	Wed Nov 07 15:26:07 2012
last finish time for monitoring loop	Wed Nov 07 15:26:05 2012
Previous Loop Duration (seconds)	42
Average Loop Duration (seconds)	46
- Monitoring for Non-Spectrum Devices**:
 

Background1 thread state	Awake
Background1 thread work to do	No work to do
last start time for monitoring loop	Wed Nov 07 15:26:36 2012
last finish time for monitoring loop	Wed Nov 07 15:26:35 2012
Previous Loop Duration (seconds)	0
Average Loop Duration (seconds)	0
- Shutdown Status**:
 

Stop Time	Mon Nov 5 16:00:05 2012
Start Time	Mon Nov 5 16:00:13 2012
System shutdown	Not shutting down
- Monitored Systems**:
 

Number of Networks	4
Number of Buses	4
Number of Devices	91
Number of TCP Ports in Use	92
Number of UDP Ports in Use	19
- Last Message**: Wed:04:56:43: BackgroundThread2: ERROR: Device[19]: CPT-8100\_00127,, seconds, 0  
**Current time**: Wed Nov 7 15:26:38 2012

Figure 4-1: System Status

## Viewing System Logs

The SystemManager's system log provides a comprehensive trace of the SystemManager's operation.



**NOTE:** SystemManager keeps up to ten log files (2 MB each) for Spectrum MediaDirectors, as well as its own log file (omsystem.log, omsystem.log1, etc.).

### To view the SystemManager's System log:

1. Click the **Diagnostics** tab to display the **Diagnostics** page.
2. In the left-hand column, click the **View System Log** icon to display the **View System Log** page ([Figure 4-2](#)).

The screenshot shows the 'View System Log' configuration section on the right side of the 'Diagnostics' page. It includes two dropdown menus: 'Subsystem' (set to 'All') and 'Error level' (set to 'All'), both with the placeholder text 'choose a subsystem' and 'choose an error level'. At the bottom are 'Submit' and 'Reset' buttons.

Figure 4-2: View System Log

3. In the **Subsystem** drop-down box, choose the subsystem that you are interested in viewing. Choose between **All**, **General**, **Database**, **Network**, **Callback**, **Alarm**, and **Unknown**. For most situations, choosing **All** is sufficient.
4. In the **Error Level** drop-down box, choose the desired error level that you wish to view. Choose between **All**, **Info**, **Warning**, **Error**, **Severe** and **Unknown**. When a selection other than **All** is chosen, all other error levels are filtered out.
5. Click **Submit** to display the selected log in reverse order, with the most recent entries at the top of the page. The display provides columns for **Date**, **Error Level**, **Subsystem**, **Error Number** (an internal SystemManager error code) and **Error Message**.
6. Click the **View System Log** icon to return to the **View System Log** page, where you can select new log parameters to view.
7. If desired, click **Reset** to return all drop-down boxes to their default settings.

## Viewing and/or Clearing Alarms

An **Alarm** icon appears in the upper right corner of the user interface when an event has occurred that triggers an alarm. You can check the nature and source of the alarm by following the steps in the procedure below. Note that you can also click the **Alarm** icon from any SystemManager page to access the “**View Alarms**” page.

Alarms are color coded for display as follows:

- Red indicates a critical error condition requiring immediate attention.
- Orange indicates a failed component requiring attention.
- Yellow indicates a warning requiring action to avert additional error situation.
- Blue alarms are informational in nature and usually do not require any action to be taken.

Alarms are raised when the disk space in an EFS system falls below threshold values as follows:

- When space available is less than one percent, a critical alarm (red) is raised.
- When space available is between one and five percent, an error alarm (orange) is raised.
- When space available returns to more than five percent, a new informational alarm (blue) is raised

Refer to “About Proactive Alarming and Removal” in the *Spectrum System Hardware Orientation Guide* for information on proactive alarming.

### To view and/or clear alarms:

1. Click the **Diagnostics** tab to display the **Diagnostics** page.
2. In the left-hand column, click the **View Alarms** icon to display the **View Alarms** page (*Figure 4-3*). This page lists specific alarm events as detected by the SystemManager. The list is displayed in reverse order, with the most recent alarm at the top. Columns are provided for the alarm **Level**, **Time**, **Device** (alarm source), **Event**, **Info**, and for **Clear** and **Delete** buttons as well.



**NOTE:** You can also access View Alarms page by clicking on the flashing **Alarms** icon in the upper right-hand corner. The flashing Alarms icon appears any time there are alarms, which have not been cleared.

**Figure 4-3: View Alarms**

3. In the **Device** column, use the hyperlink to access each device’s **Properties** page.

The screenshot shows a table titled "View Alarms" with a header row containing "Turn Filter ON" (unchecked), "Edit Filter" (unchecked), navigation arrows, "1-100 of 3999", and buttons for "Clear All" and "Delete All". The table has columns for Level, Time, Device, Event, Info, and actions (Clear? and Delete). The data rows show various system events such as voltage changes, parameter readings, and temperature changes across different devices like CLB02690, CSS02321, and CLB02876.

Level	Time	Device	Event	Info	Clear?	Delete
INFO	Mon Apr 20 10:09:12	CLB02690	Voltage has changed.	5.0V Line reading is 5.03 Volts, which is normal (4.50 - 5.50).	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Mon Apr 20 10:08:44	CLB02690	Parameter reading is unknown.	5.0V Line reading is unknown.	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Mon Apr 20 10:08:18	CSS02321	Voltage has changed.	5.0V Line reading is 5.12 Volts, which is normal (4.50 - 5.50).	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
FAIL	Mon Apr 20 10:08:06	D2-02889H1	Device has 1394 bus error.	Node 0	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Mon Apr 20 10:07:51	CSS02321	Parameter reading is unknown.	5.0V Line reading is unknown.	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Mon Apr 20 10:07:23	CLB02876	Temperature has changed.	Motherboard Temperature reading is 35 Celsius, which is normal (10 - 57).	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Mon Apr 20 10:06:56	CLB02876	Parameter reading is unknown.	Motherboard Temperature reading is unknown.	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
FAIL	Mon Apr 20 10:06:11	D2-02889H1	Device has 1394 bus error.	Node 0	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Mon Apr 20 10:05:36	CSS02200	Temperature has changed.	CPU Temperature reading is 35 Celsius, which is normal (10 - 72).	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Mon Apr 20 10:05:35	CSS01817	Fan speed has changed.	Fan 1 reading is 12887 RPM, which is normal (1000).	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Mon Apr 20 10:05:08	CSS02200	Parameter reading is unknown.	CPU Temperature reading is unknown.	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Mon Apr 20 10:05:08	CSS01817	Parameter reading is unknown.	Fan 1 reading is unknown.	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
FAIL	Mon Apr 20 10:04:14	D2-02889H1	Device has 1394 bus error.	Node 0	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Mon Apr 20 10:03:47	CSS02062	Voltage has changed.	3.3V Line reading is 3.31 Volts, which is normal (3.00 - 3.60).	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Mon Apr 20 10:03:21	CSS02062	Parameter reading is unknown.	3.3V Line reading is unknown.	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Mon Apr 20 10:02:26	CLB02876	Temperature has changed.	Motherboard Temperature reading is 35 Celsius, which is normal (10 - 57).	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
FAIL	Mon Apr 20 10:02:18	D2-02889H1	Device has 1394 bus error.	Node 0	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Mon Apr 20 10:01:58	CSS02062	Voltage has changed.	3.3V Line reading is 3.31 Volts, which is normal (3.00 - 3.60).	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Mon Apr 20 10:01:58	CLB02876	Parameter reading is unknown.	Motherboard Temperature reading is unknown.	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Mon Apr 20 10:01:52	CSS02062	Parameter reading is unknown.	3.3V Line reading is unknown.	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
FAIL	Mon Apr 20 10:00:21	D2-02889H1	Device has 1394 bus error.	Node 0	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>

4. If desired, click **Turn Filter On** to apply the alarm filter, which is defined by using the **Edit Filter** check box. Once clicked, the filter is applied and the button changes to **Turn Filter Off**.

Refer to [Filtering Alarms](#) for instructions on filtering alarms using the **Edit Filter** check box.

5. Events are shown from the most recent alarms to the earliest alarms. A maximum of 100 alarms are shown at any given time using the page navigation buttons. If desired, you can perform the following actions:

- Click the following button to see the last 100 alarms:
- Click the following button to see the next 100 alarms:
- Click the following button to view the previous 100 alarms:
- Click the following button to see the most first 100 alarms:
- Click **Clear All** to clear all alarms in the list, but retain the individual events. This action also clears the Alarm icon from the upper right corner of the user interface.
- Click **Delete All** to remove all alarms from the list and clear the Alarm icon.
- Click **Clear** to clear an individual event alarm and retain the event in the list. This action clears the Alarm icon for that event, but the icon may continue to blink if other alarms are active.
- Click **Delete** to delete the event from the list and clear that event's Alarm icon. The icon may continue to blink if other alarms are active.

## Filtering Alarms

The **View Alarms** page allows you to filter the alarms that are displayed by using the **Edit Filter** check box.

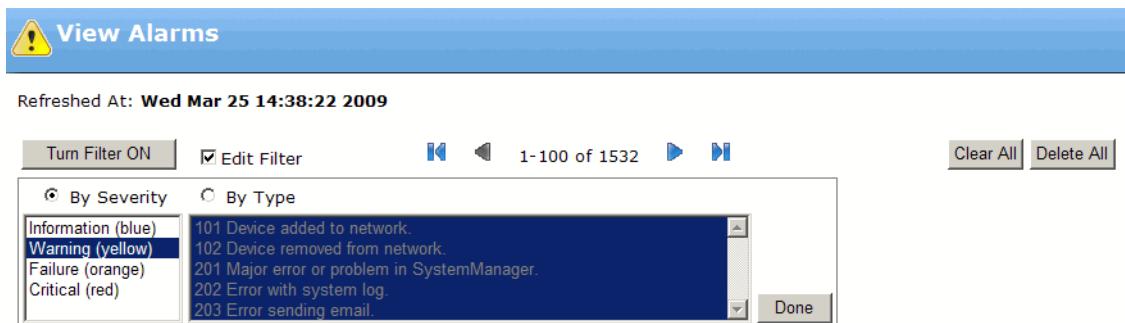
Note that alarm filter settings apply only to the user that sets them. To set alarm filters for multiple users, each user must log in to SystemManager and set the alarm filters as desired.



**NOTE:** If a user does not set an appropriate alarm filter level or if the filter level is off, and the **Send email notifications to all users?** setting on the **Options** page is set to **yes**, the user will receive email notifications for ALL alarms. To change the alarm notifications setting, refer to [Setting E-mail Alarm Notifications](#).

### To edit the alarm filter:

1. From the **Diagnostics** tab, in the left-hand column, click the **View Alarms** icon to display the **View Alarms** page.
2. Select the **Edit Filter** check box to open the Edit Filter menu options, as shown in [Figure 4-4](#).



**Figure 4-4: Edit Filter**

3. Click **By Severity** to filter the alarms according to alarm level, or click **By Type** to filter the alarms according to alarm type.
  - If you click **By Severity**, select from the following alarm levels: **Information**, **Warning**, **Failure**, or **Critical**.
  - If you click **By Type**, select the type(s) of alarms you wish to view. To select multiple alarm types, you can either press the **CTRL** key and click one type at a time, or press the **SHIFT** key and use the scroll bar to click and select a group of types. Note the following points:
    - When editing the **Notify by type** filter for the first time, all alarms are enabled by default. Harmonic recommends that you review the list of alarms and disable certain alarm(s) if appropriate.
    - After upgrading to newer versions of the SystemManager application software, review the available alarms and select or deselect as appropriate; in some releases, new alarms will be available. Harmonic recommends that you enable all new alarms unless you are sure you do not want these new alarms.
    - Some events listed in the **View Alarms** page are prefaced with the word, **[deprecated]**. Although listed and selectable here, these events will never appear in the **Events** column of the **View Alarms** page. However, for each "deprecated" event, other comparable events can be selected for monitoring and notification on the **View Alarms** page.

4. Once you have selected the options for the alarm filter, click **Done**. You must click Done to enable the new settings.



**NOTE:** While the Edit Filter checkbox is checked, SystemManager does not auto-refresh. Once you click Done, auto-refresh restarts.

5. Once you have clicked Done, click **Turn Filter On** to apply your alarm selections.
6. If you wish to receive e-mail notifications of alarms that pass your indicated filter, you can configure SystemManager to send such notifications. From the **Home** tab, click **Options** icon to open the **Options** page, and then use the **Send email notifications to all users?** drop-down box to indicate, by selecting **Yes** or **No**, whether or not you wish to receive e-mail notifications of alarms. For detailed instructions, refer to [Setting E-mail Alarm Notifications](#).

E-mails will be sent to the e-mail address that is specified on the **Modify User Setting** page. Refer to [Modifying Users](#) for setup instructions. You will only be notified of selected alarms when e-mail notification is properly set up on the **Options** page and your individual e-mail address is setup on the **Modify User Setting** page.



**NOTE:** SystemManager sends e-mail notifications to the specified mail server using the standard SMTP port – Port 25.

## Editing Alarm Thresholds

The **Edit Thresholds** page allows you to modify the threshold limits for various SystemManager alarms. This would allow you, for example, to lower the percentage of file system utilization required to generate an alarm.

### To edit the thresholds for SystemManager alarms:

1. Click the **Diagnostics** tab to display the **Diagnostics** page.
2. In the **Diagnostics** column, click the **Edit Thresholds** icon to display the **Edit Thresholds page** ([Figure 4-5](#)).

The screenshot shows the 'Edit Thresholds' interface with three main sections: Omneon MediaGrid, Local File System, and Spectrum.

**Omneon MediaGrid**

- Cluster Storage Utilization:**

Category	Level	Limit (%)	Default Value (%)
Cluster	Critical	95	95
Storage Utilization	Error	90	90
- Cluster Bandwidth Utilization (Average per ContentServer):**

Category	Level	Limit (%)	Default Value (%)
Cluster Bandwidth Utilization (Average per ContentServer)	Critical	90	90
	Error	80	80
- ContentServer Storage Utilization:**

Category	Level	Limit (%)	Default Value (%)
ContentServer	Critical	95	95
Storage Utilization	Error	90	90
- ContentServer Bad Slice Count:**

Category	Slice Count	Limit	Default Value
ContentServer	Threshold	128	128
Bad Slice Count	Delta	15	15

**Local File System**

- Local File System Storage Utilization:**

Category	Level	Limit (%)	Default Value (%)
Local File System	Critical	98	98
Storage Utilization	Error	95	95

**Spectrum**

- Extended File System Storage Utilization:**

Category	Level	Limit (%)	Default Value (%)
Extended File System	Critical	99	99
Storage Utilization	Error	95	95

**Buttons:** Submit, Reset

Figure 4–5: Edit Thresholds

- For **Omneon MediaGrid** systems, you can view or modify the threshold limit for the following:
  - The percentage of **Storage Utilization** in a **Cluster**. The limit for Critical or Error alarms can be modified.
  - The average **Cluster Bandwidth Utilization per ContentServer**. The limit for Critical or Error alarms can be modified.
  - The percentage of **Storage Utilization in a ContentServer**. The limit for Critical or Error alarms can be modified.
  - The number of **Bad Slices** in a **ContentServer**. The limit for Threshold or Delta alarms can be modified.

For a **Local File System**, which may include a customer-supplied system, you can view or modify the threshold limit for the percentage of **Storage Utilization**. The limit for Critical or Error alarms can be modified.

For a **Spectrum** system, you can view or modify the threshold limit for the percentage of **storage utilization**. The limit for Critical or Error alarms can be modified.



**NOTE:** Editing thresholds for MediaDeck alarms is not supported.

4. Change the value shown in the **Limit** column.
5. Click the **Submit** button at the bottom of the page. The changes take effect automatically.

To return to the default values shown in the **Default Value** column, click the **Reset** button at the bottom of the page.

## Connecting a Device from a Different IP Network

The Connect Device feature allows you to connect to a Harmonic device that is not in the same IP network as your Harmonic system.

### To connect a device from a different IP network:

1. Before connecting a device to SystemManager, make sure that device monitoring is on. To check device monitoring, click the **Home** tab to open the **Options** page, and view the “Current state of Device Monitoring” field at the top of the page. If the “Current state of Device Monitoring” field displays **NOT monitoring**, then click **Start Monitoring** and wait for the state to change to **monitoring** before continuing to connect the device. This may take a few minutes depending on the number of devices in your system. Also, note the status of devices may show **Not Responding** for a brief interval after monitoring has been turned on
2. From the **Diagnostics** tab, click the **Connect Device** icon in the left-hand column. The **Connect Harmonic Device** page appears, as shown in *Figure 4–6*.
3. Enter the device IP address or device name in the associated field, and then click **Connect**.



You may force a connection to an Harmonic device by entering its IP address or name.

Enter device IP address or device name:  Connect

Note: To connect to multiple devices, use a space between names and/or IP addresses.

**Figure 4–6: Connect a Harmonic Device**

To remove a device, refer to [Removing Devices](#).

## Removing Devices

### To remove a device that is no longer part of your Harmonic system:

1. Click the **Diagnostics** tab to display the **Diagnostics** page.
2. In the left-hand column, click the **Remove Device** icon to display the **Remove Devices** page (*Figure 4–7*).

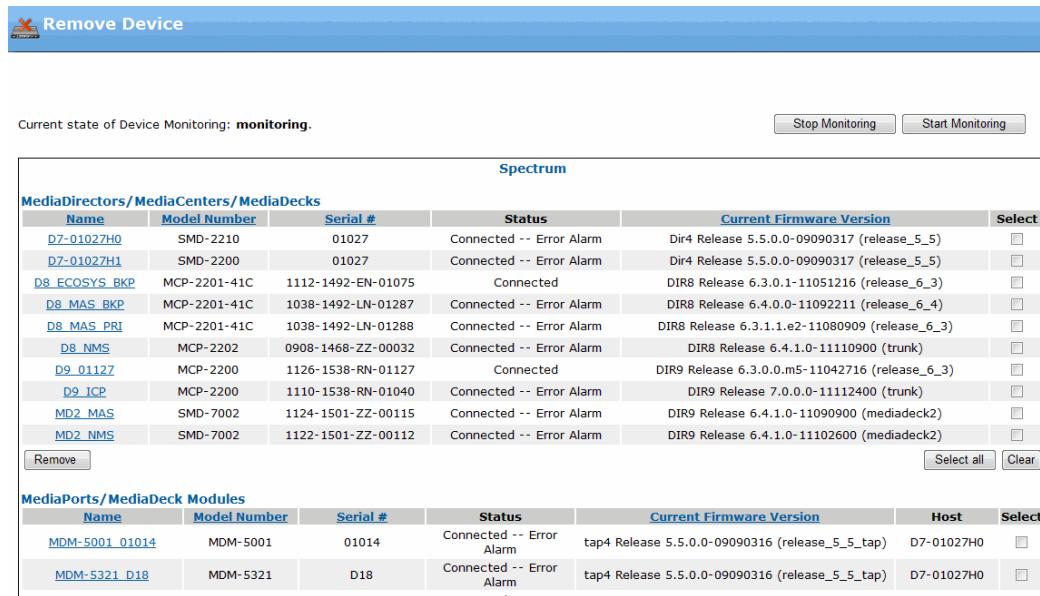


Figure 4-7: Remove Device

3. Click **Stop Monitoring** to stop device monitoring. Once the “Current state of Device Monitoring” field displays **NOT monitoring**, continue to the next step. Note this may take a few minutes depending on the number of devices in your system.
4. Select one or more devices from one of the menus on the page.
5. Click the **Remove** button at the bottom of the menu, and then click **OK** to confirm. After a brief pause, a message appears indicating that the device has been removed (it has also been removed from the System Diagram).
6. Click **Start Monitoring** to resume device monitoring. Make sure the “Current state of Device Monitoring” field changes to **monitoring**.



**NOTE:** Device status may show **Not Responding** for a brief interval after monitoring has been turned back on.

## Adding Custom Help and Custom Configuration Notes

Use this procedure to add a custom help file to the **Help** tab. These files are useful for documenting a facility's local Harmonic system configuration.

### To add a custom Help file:

1. Click the **Help** tab to display the **Help** page.
2. In the left-hand column, click the **Custom** hyperlink (or icon) to display the **Custom** page. After SystemManager installation, this page displays information on how to modify its content.
3. Using your preferred HTML editor or word processor, create an HTML file that contains system configuration information, such as rack layouts, Fibre Channel wiring, IEEE 1394 wiring, device names, etc.
4. Save the file with the name “**index.htm**.”
5. Copy this file onto the SystemManager platform. Place it in the following directory:  
D:\Omneon\Apache\htdocs\local\

6. To verify that the file has been properly placed, click the **Help** tab and then the **Custom Hyperlink** (or icon). Your customized file should replace the Custom page.
7. You can add or change this information simply by editing the “**index.htm**” file as required.

## Viewing SystemManager Software Version Information

From the **Help** tab, click the **Version Information** icon in the left-hand column to display information about the SystemManager version and supported web browsers.

## Accessing the SystemManager Online Help System

To access the SystemManager Online Help System, click the **Help** tab, and then, in the left-hand column, click the link for **Launch Online Help**. The Help system opens in a separate browser window, and allows you to select topics from a table of contents or perform a search of help topics.

## Part II: Spectrum

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# Chapter 5

## Spectrum Video Server Basic Configuration

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This chapter provides basic configuration and operation instructions for Spectrum video servers in a Spectrum system. Choose from the following topics:

- [\*Viewing the Components of a Spectrum System\*](#)
- [\*Viewing Spectrum Video Server Properties\*](#)
- [\*Changing a Spectrum Video Server Host Name\*](#)
- [\*Viewing or Changing MediaDirector IP Settings on the MediaDirector 2100, 2101, 2102, or 2102B\*](#)
- [\*Configuring Ethernet Interfaces on the MediaCenter\*](#)
- [\*Configuring Network Settings on the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000\*](#)
- [\*Changing a Spectrum Video Server Description\*](#)
- [\*Changing MediaDirector Clock Reference VITC Lines \(for MediaDirectors 2100, 2101, 2102 and 2102B\)\*](#)
- [\*Changing MediaDirector Reference Field Rate \(for MediaDirectors 2100, 2101, 2102 and 2102B\)\*](#)
- [\*Specifying Character Sets to Use with Certain Protocols and QuickTime\*](#)
- [\*Viewing Character Sets Associated with Spectrum Video Servers\*](#)
- [\*Editing Track Tags\*](#)
- [\*Configuring Track Tag Rules for an Audio Track\*](#)
- [\*Copying the Track Tag File to Spectrum Video Servers Outside an EFS\*](#)
- [\*Changing the Spectrum Video Server Time Zone\*](#)
- [\*Configuring the MediaDirector Fibre Channel Loop Speed\*](#)
- [\*Changing the Spectrum Video Server Wink State\*](#)
- [\*Rebooting the Spectrum Video Server\*](#)
- [\*Powering Down the MediaDirector 2100/2101 and 2102/2102B\*](#)
- [\*Powering Down the MediaDirector 2252/2251 and 2202/2201, MediaCenter, or MediaDeck 7000\*](#)
- [\*Viewing a Snapshot of the Spectrum Video Server Log\*](#)
- [\*Upgrading Spectrum Video Server Firmware\*](#)
- [\*Replacing a Spectrum Video Server\*](#)
- [\*Replacing a MediaDirector 2100, 2101, 2102 or 2102B\*](#)



**IMPORTANT:** The procedures outlined in this section are written for qualified technical personnel, skilled at advanced networking procedures. If you have any questions, please consult with your facility's Information Service staff or contact Technical Support.

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### Viewing the Components of a Spectrum System

The **System Diagram** page in the SystemManager application provides a visual overview of the components in a Spectrum System. Devices are arranged in categories such as buses, MediaDirectors, MediaPorts and "Other Devices." The current device status is always shown.



**NOTE:** SystemManager must poll for device status, which results in some delay based on the configured discovery interval. For information, refer to [Setting the Discovery Interval](#).

Each heading and icon is a hyperlink that takes you to a different location where the devices can be monitored and configured. Note the following:

- Each video server is displayed as an icon. This icon is a hyperlink that takes you to the **Properties** page for that video server.
- Under each server, specific device connections are shown — devices that are physically attached to that server (such as MediaPorts, third-party devices, and other MediaDirectors in dubbing configurations).
- A red question mark will be shown for unrecognized devices.
- The legend at the top of the data section indicates two types of warning boxes (or highlights) that can appear behind a MediaDirector or MediaPort icon:
  - Amber = indicates a warning alarm, or if the device is configuring.
  - Red = indicates if the device has an error, a critical alarm, or if the device is not responding.

In both cases, you can click the icon to see the alarms for that specific device.

- The MediaDirector 2100 is a single-host device. The host can be named, and it has its own individual IP address and attached devices. On the **System** diagram, the naming convention for the overall MediaDirector 2100 is a single host name (e.g., DIR201).
- The MediaDirectors 2101, 2102, and 2102B are multiple host devices and special conventions are used for each host on the **System** diagram. Each host can be named separately, and each has its own individual IP address and attached devices.
  - The naming convention for the overall MediaDirector 2101 (including both hosts) is *both* host names separated by a slash (e.g., DIR101/DIR102).
  - The naming convention for the overall MediaDirector 2102 or 2102B is *all* host names separated by a slash (e.g., DIR101/DIR102/DIR103/DIR104).

#### To view the components of a Spectrum System:

1. Click the **Configuration** tab, and then click the **System Diagram** icon in the left-hand column to display the **System Diagram** ([Figure 5-1](#))—essentially a “tree” of each Spectrum System device.

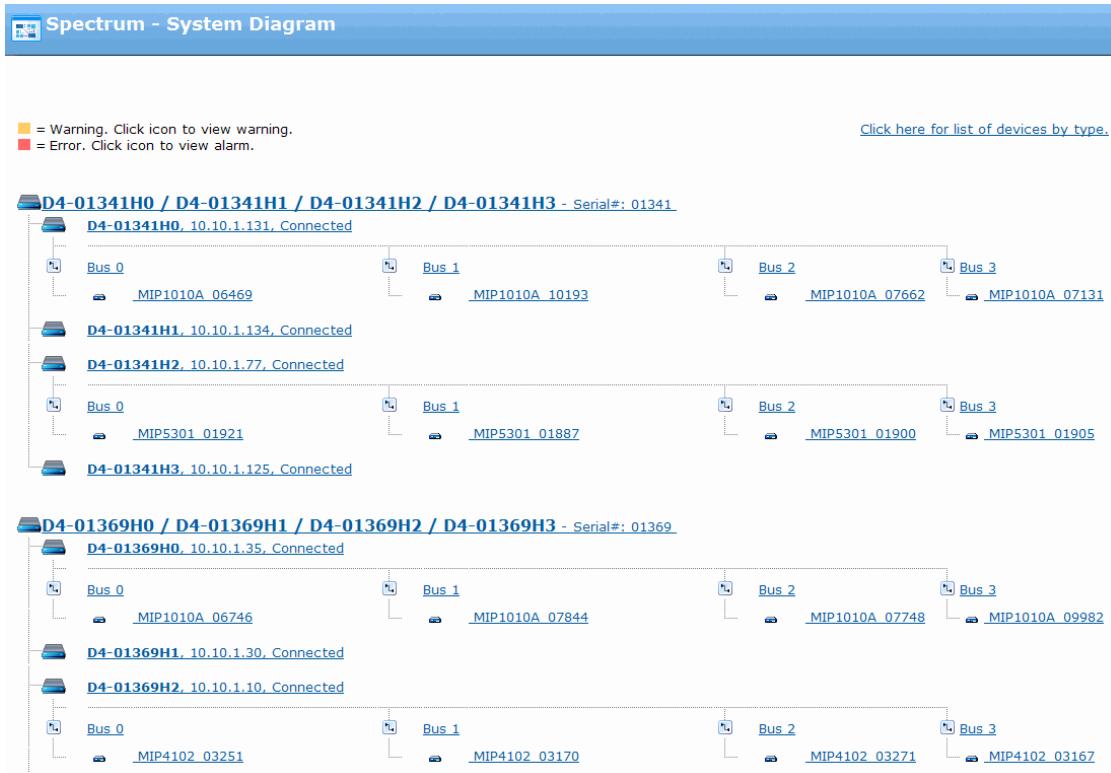


Figure 5–1: Spectrum—System Diagram

The System Diagram is sorted by MediaDirectors and hosts. Each MediaDirector is shown to the left and above, with individual hosts directly below (second level). Each host, in turn, displays the four buses (third level), and all devices connected to each bus (fourth level).

Note the following:

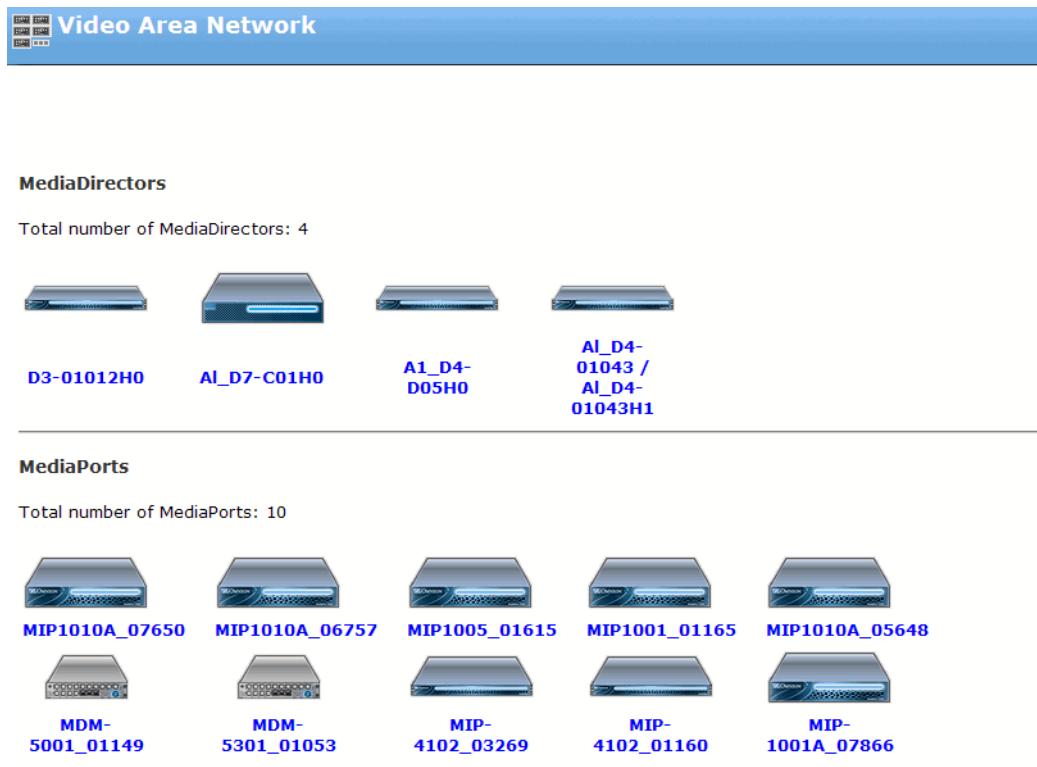
- The default MediaDirector 2100 name is **D3\_nnnnnH0**, where:
  - The first 5 n's are the MediaDirector's 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
  - H = host
- The default MediaDirector 2101 name is **D2\_nnnnnHn**, where:
  - The first 5 n's are the MediaDirector's 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
  - Hn = Host 0 or 1
- The default name for the MediaDirector 2102 or 2102B is **D4\_nnnnnHm**, where:
  - The first 5 n's are the MediaDirector's 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
  - Hm = Host 0 -3
- The default name for the Omneon MediaDeck is **D7\_nnnnnHn**, where:
  - The first 5 n's are the MediaDeck's 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
  - Hn = Host 0 or 1

- The default name for the MediaDirector 2202 or 2201 is **D8\_nnnnn**, where:
  - The first 5 n's are the MediaDirector's 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
- The default name for the MediaCenter is **D9\_nnnnn**, where:
  - The first 5 n's are the MediaCenter's 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
- The default name for the MediaDeck 7000 is **D11\_nnnnn**, where:
  - The first 5 n's are the MediaDeck's 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
- The default name for the MediaDirector 2252 or 2251 is **D12\_nnnnn**, where:
  - The first 5 n's are the MediaDirector's 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
- Each MediaPort is listed by the label MIP followed by a 5-digit **Unit ID**, which electronically identifies the MediaPort. This ID is coded at the factory.
- Each MediaDeck Module for the Omneon MediaDeck is listed by the label MDM followed by a 5-digit **Unit ID**, which electronically identifies the MediaDeck Module. This ID is coded at the factory.
- Your Unit IDs will differ from those illustrated in *Figure 5–1*.
- Hosts and devices can be renamed using the SystemManager, thus your diagram can be customized according to your system configuration. The MediaDirector name is generated automatically, based on the combination of the host names.
- The device labels on the **System** diagram are designed as placeholders initially, with the assumption that the user will change them to something more meaningful (for example, names that reflect the actual use of the devices).



**NOTE:** The Unit IDs cannot be changed, but the labels can be changed on the **Properties** pages for the individual MediaDirector, MediaPorts, and Third-party Devices.

- MediaPort names are used only within the SystemManager, while MediaDirector names can also be used from Windows machines for other purposes, as described in **System Configuration**.
2. In the upper-right corner of the System Diagram page, click the **Click here for list of devices by type** link to display the **Video Area Network** page, shown below.



**Figure 5–2: Video Area Network**

The **Video Area Network** page is a scrolling list of all components that comprise your network, including MediaDirectors, MediaCenters, MediaDecks, MediaPorts, and peripheral devices.

- Click a MediaDirector, MediaCenter, or MediaDeck icon to go to the Physical Configuration page for that device.
- Click a MediaPort icon to go to the MediaPort Properties page.
- Click a Third-party Device icon to go to the Device Properties page.

## Changing the Bus Name

If desired, you can change the bus name to easily identify the bus within the SystemManager application, specifically on the **System** diagram.

### To change the bus name:

1. Click the **Configuration** tab to display the **Configuration** page and **System** diagram.
2. On the **System** diagram, click the desired **Bus** icon to display its **Bus Properties** page.
3. Click **Change Name** to display the **Change Bus Name** page.
4. Type the new name in the text box.

Refer to [About Naming Files and System Elements](#) for proper naming conventions.

5. Click **Save** to complete the procedure and return to the **Bus Properties** page.

## Changing the Bus Description

The Bus Description is useful in clarifying the role of a particular Bus in your Spectrum System.

### To change the Bus Description:

1. Click the **Configuration** tab to display the **Configuration** page and **System** diagram.
2. On the **System** diagram, click the desired **Bus** icon to display its **Bus Properties** page.
3. Click **Change Desc** to display the **Change Bus Description** page.
4. Type the desired description in the text box.
5. Click **Save** to save the description and return to the **Bus Properties** page. The new description appears in the **Bus Description** field.

## Viewing Bus Properties

The **Bus Properties** page provides information about a MediaDirector's IEEE 1394 buses and nodes, and also allows you to rename individual buses and enter bus description.

To view **Bus Properties**, click any **Bus** heading or **Bus** icon on the **System Diagram** page. The **Bus Properties** page appears, as shown in *Figure 5–3*.

The screenshot shows the 'Bus 0 on D4-01032H0-Hi! Properties' page. At the top, there is a toolbar with icons for saving, deleting, and changing the bus name. Below the toolbar, the main content area displays various bus properties in a table format:

Name	Bus13037	Change Name
<b>Root Node</b>	<a href="#">MIP1010A_04145: node8561722</a>	
<b>Number of nodes</b>	3	
<b>Number of devices</b>	2	
<b>Bus Access</b>	<a href="#">D4-01032H0-Hi!: Node13036</a>	
<b>1394 bandwidth units available</b>	2468	
<b>Number of Streams</b>	4	
<b>Specific iso channels in use</b>	31 32 33	
<b>Topology Generation</b>	2	
<b>Bus Description</b>	<input type="text" value=""/>	<b>Change Desc</b>
<b>Last Message</b>	Wed:18:15:07: Topology read successfully.	
<b>Status current at</b>	Thu May 15 10:44:27 2008	

At the bottom right of the main content area is a 'Done' button. Below the main content area is a separate table titled 'Port Connections' showing the details of each port connection:

PhyID	GUID	On Device	# Ports	Port Connections
0x00	<a href="#">00d02807-000000f8</a>	<a href="#">D4-01032H0-Hi!</a>	3	Port 0 To parent node 0x0001 Port 1 Unconnected Port 2 Unconnected
0x01	<a href="#">00d02801-00001890</a>	<a href="#">MIP1010A_04145</a>	3	Port 0 Unconnected Port 1 To child node 0x0000 Port 2 To parent node 0x0002
0x02	<a href="#">00d02801-00001891</a>	<a href="#">MIP1010A_04145</a>	3	Port 0 Unconnected Port 1 Unconnected Port 2 To child node 0x0001

Figure 5–3: Bus Properties



**NOTE:** This page is designed for Technical Support use only.

You can view (and edit some of) the following Bus Properties:

- **Name:** This field lists the name given to a selected bus.
  - **Change Name:** Click to rename the individual bus. Refer to [Changing the Bus Name](#) for instructions.
- **Root Node:** Indicates in IEEE 1394 terminology where the bus topology is rooted. Two hyperlinks are shown — one for a device (which contains the root node), and one for the node itself.
  - **Device (Hyperlink):** Click to display the root device's **Physical Properties** page.
  - **Node (Hyperlink):** Click to display the root **Node Properties** page.
- **Number of devices:** Indicates the number of devices discovered — those that are associated with this bus.
- **Bus Access:** Indicates the device and node used to access the bus by the SystemManager. Two hyperlinks are shown — one for a device (which contains the access node), and one for the node itself.
- **1394 Bandwidth Units Available:** Indicates the amount of bandwidth available on the bus, in IEEE 1394 bandwidth units.
- **Number of Streams:** Indicates the number of streams of video, audio, or data being carried on the bus.
- **Specific Iso Channels In Use:** Indicates the Iso channels reserved on the bus.
- **Topology Generation:** Indicates the generation number of the topology of the bus.
- **Bus Description:** The text box displays a scrollable multi-line description of the selected bus. This field is useful for entering information that clarifies the role of the specific bus in your system.
  - **Change Desc:** Click to change the Bus description. Refer to [Changing the Bus Description](#) for instructions.
- **Last Message:** Indicates the last message (of any type) associated with that bus.
- **Status Current At:** Indicates the time at which the page was displayed.
- **Done:** Click to return to the **System** diagram

The **Bus Table** in [Figure 5–4](#) provides information primarily used for system debugging purposes:

PhyID	GUID	On Device	# Ports	Port Connections
0x00	<a href="#">00d02802-00000008b</a>	MediaPort01070	3	Port 0 Unconnected Port 1 Unconnected Port 2 To parent node 0x0001
0x01	<a href="#">00d02802-00000008a</a>	MediaPort01070	3	Port 0 To parent node 0x0002 Port 1 Unconnected Port 2 To child node 0x0000

**Figure 5–4: Bus Table**

- PhyID (VID) Column:** This column displays the IEEE 1394 Physical Node ID and the Virtual Node ID.
- GUID Column:** This column displays the IEEE 1394 Global Unique Identifier.
- GUID (Hyperlink):** Click to display the **Node Properties** page, which shows more node related information.
- On Device Column:** This column displays the physical device name that is associated with the IEEE 1394 GUID, Physical Node ID, etc.
- MediaPort (Hyperlink):** Click to display the **MediaPort Properties** page, which shows information related to the selected MediaPort.
- # Ports Column:** This column displays number of IEEE 1394 ports used per node.
- Port Connections Column:** This column displays the port connection assignments for each node.

## Viewing Spectrum Video Server Properties

The Properties page for your Spectrum video server allows you to check the system properties and properties of devices that are connected to the Spectrum video server.

### To view Spectrum Video Server Properties:

1. From the **System Diagram**, click any Spectrum video server heading (or icon) to reach the **Physical Configuration** page (*Figure 5-5*).

**D4\_01022H0 / D4\_01022H2 / D4\_01022H3 / D4\_1022H1 Physical Configuration**

**D4\_01022H0 / D4\_01022H2 / D4\_01022H3 / D4\_1022H1**

Sharing with:	D4_01022H3	D4_01022H0	D4_1022H1	D4_01022H2
All MediaStores connected to this MediaDirector are of type MS or MSS.				

**Connected MediaStorage**

Name	GUID	Model	Environment Status	F/C Loops	# Drives	RAID sets (channel)
MediaStore15570	20000050-cc021e4a	RS1600-FCF4 (MS)	Error	0	16	RaidSet7934 (A) RaidSet7936 (B)

Click on an object's image to view detail information.

Refresh Interval for this page is 30 seconds.

**Figure 5-5: MediaDirector Physical Configuration**

This page displays the selected Spectrum video server along with the name, GUID, model type, environmental status, Fibre Channel loops, number of drives, and RAID sets in each MediaStore that is connected to the Spectrum video server. Several MediaStores may be shown depending upon your configuration.



**NOTE:** An MSC MediaStore cannot be combined with an MS or MSS MediaStore on the same Spectrum system. A warning message appears in SystemManager if you attempt an unsupported configuration such as this.

2. Click the picture of the Spectrum video server to display the **Properties** page. See [Figure 5–6](#).

## Host Properties

The **Host Properties** section at the top of the page varies according to the number of hosts supported by MediaDirector model. Note that the Spectrum MediaDeck 7000, MediaCenter, and MediaDirector 2252/2251 and 2202/2201 are all single host devices and the Properties page provides the same list of properties as those shown in [Figure 5–6](#).

The **Host Properties** section of a single-host MediaDirector 2202/2201 is shown in [Figure 5–6](#).

Host Properties		Host 0			
<b>Parameters</b>					
<b>Host Name</b>		CH_D8_00001 <a href="#">Change</a>			
<b>Host Status</b>		Connected -- Error Alarm			
<b>Host IP Address(es)</b>		10.10.38.22/10.10.38.23/			
<b>Filesystem Low Priority Bandwidth Limits (per MediaDirector)</b>		<b>FTP &amp; Samba</b> 560 MB/sec		<b>AFP</b> Unlimited	
<b>Harmonic MediaGrid Accounts</b>		<b>ContentDirector</b> 10.4.250.229	<b>Username</b> omneon	<b>Domain</b>	<b>Status</b> Valid
<b>Last Message</b>		Thu:21:45:12: Successfully checked/added trap destination record with Manager's IP address.			
<b>Change Settings</b>		<a href="#">Network Settings</a> <a href="#">Low Priority Bandwidth Settings</a> <a href="#">Harmonic MediaGrid Accounts</a> <a href="#">Access Control Settings</a> <a href="#">Edit filetypes.conf</a> <a href="#">Update Logging variables</a>			

**Figure 5–6: MediaDirector 2202/2201 Single Host Properties**

The MediaDirector 2101, and MediaDirector 2102 or 2102B are multiple-host devices.



**NOTE:** On a MediaDirector 2102, Host 0 and Host 2 have 1394 resources and can have players. Host 1 and Host 3 do not have players.

- **Host Name:** This field lists the Spectrum video server's user-assigned host name, which appears in the System Diagram, page titles and other Spectrum video server-related fields.

When you first start the SystemManager, it queries the name from the MediaDirector. The name defaults to the DNS name, but if that name is unavailable, the MediaDirector creates a name for itself using its serial number.

If you change the MediaDirector host name and there is a DNS name available, the new name will not match the DNS name. However, the MediaDirector will use the new host name in preference to the DNS name. Note that having different names (internal vs. DNS) may cause confusion when trying to access the MediaDirector from a PC.



**NOTE:** If you are using DNS to name Spectrum video servers, do not change the host name using the **Name** button.

- **Host Status:** Describes the Spectrum video server's current status, such as "Connected," "Configuring," "Rebooting," "Not Responding," etc. This label also appears adjacent to the Spectrum video server's name in the **System** diagram. Note that it may take up to 30 seconds for the SystemManager application to reflect new status — for example, when a connection is lost or regained.
- **Host IP Address(es):** Lists the MediaDirector host's IP address. For the MediaDirector 2252/2251 and 2202/2201 and MediaCenter, this shows the IP addresses of the Public Ethernet Interfaces.
- **Ethernet MAC:** **(for MediaDirectors 2100, 2101, 2102 and 2102B)** Lists the MediaDirector host's MAC (Medium Access Control) address.
- **WorkGroup:** **(for MediaDirectors 2100, 2101, 2102 and 2102B)** Lists the name of the host's Workgroup on the network.
- **Ethernet MTU Size:** **(for MediaDirectors 2100, 2101, 2102 and 2102B)** Shows the maximum size for Ethernet packets.



**NOTE:** At this time, Harmonic does not recommend changing from the standard packet size of 1500 bytes.

- **TCP Segment Acceleration:** **(for MediaDirectors 2100, 2101, 2102 and 2102B)** Shows whether hardware acceleration for sending large TCP segments is enabled (ON).



**NOTE:** At this time, Harmonic does not recommend enabling this feature.

- **Filesystem Low Priority Bandwidth Limit (per MediaDirector/MediaCenter/MediaDeck):** Shows the File System low priority bandwidth limit for File System reads and writes of clips.



**NOTE:** At this time, Harmonic does not recommend changing this value from the default setting.

- **Harmonic MediaGrid Accounts (for MediaDirectors 2252/2251 and 2202/2201, MediaDeck 7000, and MediaCenter):** Shows the ContentDirector, User name, and Domain of all the Omneon MediaGrids connected to this video server.
- **Harmonic MediaGrid ContentDirector IP address (Host name):** **(For MediaDirectors 2100, 2101, 2102 and 2102)** Shows the IP address of a ContentDirector in an Omneon MediaGrid (if any), used to communicate between a Spectrum system and an Omneon MediaGrid.
- **Number of 1394 Nodes:** **(for MediaDirectors 2100, 2101, 2102 and 2102)** Lists the number of IEEE 1394 GUID (Global Unique Identifier) found for this MediaDirector Host. If this number differs from the Max. Number of 1394 Nodes, this may indicate a hardware problem.
- **Max. Number of 1394 Nodes:** **(for MediaDirectors 2100, 2101, 2102 and 2102)** Lists the maximum number of nodes available for this MediaDirector Host.
- **Node GUID:** **(for MediaDirectors 2100, 2101, 2102 and 2102)** Lists the IEEE 1394 GUID (Globally Unique Identifier) for each of the MediaDirector's nodes. By clicking the hyperlink, the **Node Properties** page appears.
- **AFP Daemon:** **(for MediaDirectors 2100, 2101, 2102 and 2102)** Displays the status of the AFP Daemon. This is Enabled by default. To disable the AFP daemon, click Daemon Settings.
- **Samba Daemon:** **(for MediaDirectors 2100, 2101, 2102 and 2102)** Displays the status of the Samba Daemon. This is Enabled by default. To disable the Samba daemon, click Daemon Settings.

- **FTP Daemon: (for MediaDirectors 2100, 2101, 2102 and 2102B)** Displays the status of the FTP Daemon. This is Enabled by default. To disable the AFP daemon, click Daemon Settings.
- **Last Message:** Displays the last message received that deals with the indicated MediaDirector host.
- **Change Settings: Network Settings:** Click to access the Network Settings page, which allows you to configure Ethernet settings for your Spectrum video server including IP addresses, DNS and NTP settings, and for some models, Ethernet Failover settings. For information on configuring network settings for MediaDirectors 2100, 2101, 2102 and 2102B, refer to [Setting Static IP Addresses \(for MediaDirectors 2100, 2101, 2102, and 2102B\)](#). For information on configuring network settings for the MediaDirector 2252/2251 and 2202/2201, MediaCenter, or MediaDeck 7000, refer to [Configuring Network Settings on the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000](#).
- **Change Settings: Workgroup: (for MediaDirectors 2100, 2101, 2102 and 2102B)** Click to display the Change MediaDirector Workgroup page for the selected host. Refer to [Changing the WorkGroup Setting \(for MediaDirectors 2100, 2101, 2102 and 2102B\)](#) for more information.
- **Change Settings: Performance Settings: (for MediaDirectors 2100, 2101, 2102 and 2102B)** Click to access the Change MediaDirector Network/File System Performance Setting page where you can configure or change a selection of settings including **Ethernet MTU Size**, **TCP Segment Acceleration**, and **File System Low Priority Bandwidth Limit**. Refer to [Changing Network/File System Performance Settings \(for MediaDirectors 2100, 2101, 2102 and 2102B\)](#) for more information.
- **Change Settings: Low Priority Bandwidth Settings: (for MediaDirectors 2252/2251 and 2202/2201, MediaCenters, and MediaDecks 7000 only)** Click to access the Change MediaDirector Network/Filesystem Performance Settings page for the Spectrum video server where you can configure or change the low priority bandwidth limit for FTP, Samba, and AFP. Refer to [Changing Network/File System Performance Settings \(for MediaDirector 2252/2251, 2202/2201, MediaCenter, or MediaDeck 7000\)](#) for more information.
- **Change Settings: Daemon Settings: (for MediaDirectors 2100, 2101, 2102 and 2102B)** Click to access the Change MediaDirector Host AFP, Samba, and FTP Daemon enable/disable settings page where you can disable or re-enable daemons for the AFP, Samba, and FTP protocols for each host on a MediaDirector. Refer to [Changing Daemon Settings \(for MediaDirectors 2100, 2101, 2102 and 2102B\)](#) for more information.
- **Change Settings: Harmonic MediaGrid Accounts:** For MediaDirectors 2100, 2101, 2102 and 2102B, click to access the Harmonic MediaGrid ContentDirector IP Address page where you can enter or change the IP address of a ContentDirector in an Omneon MediaGrid to establish a connection. For MediaDirectors 2252/2251 and 2202/2201, MediaCenters, and MediaDecks 7000, click to access the Harmonic MediaGrid Accounts page, where you can enter Omneon MediaGrid account information to connect to one or more Omneon MediaGrid systems. Refer to [Connecting to an Omneon MediaGrid \(for MediaDirectors 2100, 2101, 2102 and 2102B\)](#) or [Connecting to an Omneon MediaGrid from the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000](#) for more information.
- **Change Settings: Edit Filetypes.conf:** Click to display the Edit Filetypes.conf page for the selected host. Continuing down the page, the same General Properties type information appears for all Spectrum video server models. Refer to [Editing the Filetypes.conf File](#) for more information.

- **Change Settings: Update Logging variables:** Use only if instructed by Technical Support. Click to access the **Change Logging Variable Settings** page where you can specify logging settings for Spectrum. Refer to [Changing Logging Variable Settings](#) for more information.

## General Properties

General Properties					
<b>Model Number</b>	MCP-2202				
<b>Additional Licensed features</b>	Playout Engine Count - 32				
<b>Serial Number</b>	0910-1468-ZZ-00001				
<b>Boot Summary</b>	System reset				
<b>Last Reboot</b>	Thu Dec 20 04:14:50 2012				
<b>Time Difference</b>	Director and Manager have same time reference.				
<b>Firmware Version</b>	DIR8 Release 7.2.0.0-12121800 (trunk)				
<b>Currently Selected Firmware Version</b>	omneon.release-4.8/4.8.R1				
<b>Status current at</b>	Thu Dec 20 21:51:22 2012				
<b>MediaDirector Description</b>	<input type="text"/> <input type="button" value="Change Desc"/>				
<b>Wink State</b>	Off				
<b>Primary File System GUID</b>	6b6e4155-0f03001				
<b>File System</b>	fs0: Started, Shared.				
<b>File System free space</b>	23.57 TB (98.7%)				
<b>File System total space</b>	23.88 TB				
<b>EPS shared with</b>	<a href="#">CH_DB_00004</a> <a href="#">CH_DB_00003</a> <a href="#">CH_DB_00002</a>				
<b>Time Zone</b>	PST				
<b>Record SPS/PPS in every frame of AVCI clips that use MXF wrapper</b>	<input type="checkbox"/> <input type="button" value="Edit Track Tags"/>				
<b>Local Disk Storage</b>	<b>FS(Partition) Name</b>	<b>Total Space (KB)</b>	<b>Used Space (KB)</b>	<b>Available Space (KB)</b>	<b>Used %</b>
	/dev	12347516	4	12347512	0
	/aufs/root.ro	1514832	1218264	219620	85
	/aufs/root.rw	644923	39583	572572	6
	/	644923	39583	572572	6
	/boot/grubpart	14793	318	13711	2
	/tmp	2048000	64	2047936	0
	/dev/shm	17825792	4	17825788	0
	/mnt/sda8	3631052	91448	3356604	3
	/mnt/fs0	2147483647	302819328	2147483647	1
<b>Process Monitoring</b>	<b>Process</b>	<b>State</b>			
	aspd	Running			
	dnsmsq	Running			
	execsvr	Running			
	magicpkt	Running			
	mgoconnd	Running			
	nmbd	Running			
	ntpd	Running			
	pure-ftpd	Running			
	smbd	Running			
	snmpd	Running			
	sshd	Running			
	syslogd	Running			
<input type="button" value="Wink on"/>	<input type="button" value="Reboot"/>	<input type="button" value="Shutdown Filesystem"/>	<input type="button" value="Shutdown Director"/>	<input type="button" value="Log Snapshot"/>	<input type="button" value="Edit Track Tags"/>
<input type="button" value="Upgrade Firmware"/>	<input type="button" value="Upgrade License"/>				<input type="button" value="Done"/>

Figure 5–7: General Properties for the MediaDirector 2202/2201

- **Model Number:** Lists the Spectrum video server's product model number.
- **Additional Licensed features:** Lists additional licensed features for this video server. For a complete list of available licenses, refer to the *Spectrum Installation and Hardware Reference Guide*.
- **Serial Number:** Lists the Spectrum video server's serial number.
- **Boot Summary:** Displays the reason why the last reboot of the Spectrum video server occurred.
- **Last Reboot:** Displays the date and time of the last reboot of the Spectrum video server.

- **Time Difference:** Shows the time difference in seconds between the SystemManager clock and the Spectrum video server clock. This is useful when comparing SystemManager logs and monitor logs on a File System.
- **Firmware Version:** Lists the current version of firmware that resides in the Spectrum video server's flash memory. Refer to "Upgrading MediaDirector and MediaCenter Firmware" in the *Spectrum Installation and Hardware References Guide*.
- **Currently Selected Firmware Version:** Lists the firmware version that is selected on the **Firmware Version Selection** page.
- **Status Current at:** Lists the most recent date and time that the page was refreshed. Note that the page is automatically refreshed every 30 seconds, unless configured otherwise.
- **MediaDirector/MediaCenter Description:** Displays a scrollable multi-line description of the Spectrum video server. This field is useful for entering data that clarifies the specific Spectrum video server's role in your system, particularly when multiple Spectrum video servers are in use.
  - **Change Desc:** Click to change the Spectrum video server's description. Refer to [Changing a Spectrum Video Server Description](#) for instructions.
- **Wink State:** Describes the wink state of the Spectrum video server's light bar, either **On** or **Off**. Refer to Wink (On/Off) description below for details.
- **Clock Ref. VITC lines: (for MediaDirectors 2100, 2101, 2102 and 2102Bs)** The two "Clock Reference" drop-down boxes select the TV lines from which the MediaDirector reads VITC (Vertical Interval Time Code) on the incoming analog reference signal. Each number indicates a video line.

For proper operation with selected third party automation applications (or when dubbing between MediaDirectors), the two selections (which default to lines **14** and **16**) must match the VITC lines of the reference black connected to the MediaDirector. Refer to [Changing MediaDirector Clock Reference VITC Lines \(for MediaDirectors 2100, 2101, 2102 and 2102B\)](#) for instructions.
- **Reference Field Rate: (for MediaDirectors 2100, 2101, 2102 and 2102Bs)** Selects the field rate at which the MediaDirector runs its internal reference clock.

When set to **Auto Select** (the default selection) the MediaDirector runs off of the clock signal that is connected to its reference input BNC. The system chooses 525 or 625 depending upon the analog input signal. The selected rate is displayed beside the box – either 59.94Hz for 525 or 50Hz for 625.

When set to **Manual**, a second drop-down box appears, allowing the user to choose between 24Hz, 50Hz, 59.94Hz or 60Hz.

Refer to [Changing MediaDirector Reference Field Rate \(for MediaDirectors 2100, 2101, 2102 and 2102B\)](#) for instructions.
- **Primary File System GUID:** Lists the File System's GUID (Globally Unique Identifier), as used by the SystemManager platform for network identification purposes.
- **File System:** Displays a link to the Filesystem Utilities page and shows the status of the file system.
- **File System Free Space:** Lists the space available on the File System in bytes, followed by the same value as a percentage of the total. The abbreviation GB stands for gigabytes (1 billion bytes); the abbreviation TB stands for terabytes (1 trillion bytes). Values that appear are the actual value, or the label "Unknown" appears if the File System has not been started.

- **File System Total Space:** Describes the total amount of space available (in bytes) on the File System. Note that if there is more than one File System on the Spectrum video server, the additional File Systems can be viewed on the **Disk Utilities** page.
- **EFS Shared With:** Displays the name of the host (if any) with which the selected host shares a File System.
- **Time Zone:** Click the drop-down arrow to select the international time zone in which your facility is located. This ensures that the “date” stamp on recorded clips is correct, and also provides assistance for Technical Support for remote troubleshooting.
- **Record SPS/PPS in every frame of AVCI clips that use MXF wrapper:** Check if you will be recording MXF-wrapped AVC-Intra video content and wish to record SPS (Sequence Parameter Set) and PPS (Picture Parameters Set) data in each frame. For information on creating an AVCI-Intra player, refer to [Creating an AVC-Intra Player](#).
- **Local Disk Storage: (for MediaDirector 2252/2251 and 2202/2201, MediaCenter, and MediaDeck 7000 only)** For each file system on the Spectrum video server, the following are displayed: Name, Total Space (in KB), Used Space (in KB), Available Space (in KB), and percent used.



**NOTE:** The information shown in this section applies only to the local file systems on the video server, not the file systems on networked MediaStores.

- **Process Monitoring: (for MediaDirector 2252/2251 and 2202/2201, MediaCenter, and MediaDeck 7000 only)** Displays the status of each process running on the Spectrum video server. This section is provided for troubleshooting purposes only.
- **Wink On/Off (button):** Click to change the wink state of the Spectrum video server’s light bar. Refer to [Changing the Spectrum Video Server Wink State](#) for instructions.
- **Reboot (button):** Click to reboot the Spectrum video server. Refer to [Rebooting the Spectrum Video Server](#) for instructions.
- **Shutdown FileSystem (button):** Click to shut down the Spectrum video server file system
- **Shutdown Director/MediaCenter (button): (for MediaDirector 2252/2251 and 2202/2201, MediaCenter, and MediaDeck only)** Click to shut down the video server. This automatically shuts down the file system and the Spectrum video server.
- **Log Snapshot (button):** Click to display a snapshot of the Spectrum video server’s log, in a separate static window within the Browser. This function is designed for Technical Support personnel only. Note that this button only appears if you have clicked a single host name (or icon) on the System diagram.
- **Edit Track Tags (button):** Click to add or edit the Track Tag File associated with the Spectrum video server. Refer to [Editing Track Tags](#) for instructions.
- **Upgrade Firmware (button):** Click to upgrade the Spectrum video server’s firmware. Refer to “Upgrading MediaDirector and MediaCenter Firmware” in the *Spectrum System Installation and Hardware Reference Guide*.
- **Done (button):** Click to return to the system diagram.

## Public Ethernet Interfaces



**NOTE:** This section applies only to MediaDirectors 2252/2251 and 2202/2201, MediaCenters, and Spectrum MediaDecks 7000.

This section displays connection information for the public Ethernet interfaces on a Spectrum video server, which are not part of the MediaPort Ethernet array. This section also displays connection information for Ethernet interfaces on any of the optional expansion cards. Refer to one of the following:

- [MediaDirectors 2252/2251 and 2202/2201 Public Ethernet Interfaces](#)
- [MediaCenter Public Ethernet Interfaces](#)
- [Spectrum MediaDeck 7000 Public Ethernet Interfaces](#)

### MediaDirectors 2252/2251 and 2202/2201 Public Ethernet Interfaces

Public Ethernet Interfaces		
Public Ethernet Ports		
Parameters	Interface 1	Interface 2
<b>Interface Name</b>	eth0	eth1
<b>Cabling</b>	Connected	Connected
<b>DHCP</b>	Enabled	Enabled
<b>IP Address</b>	10.10.9.199	10.10.9.236
<b>MAC Address</b>	00:30:48:D3:4B:32	00:30:48:D3:4B:33
<b>Subnet Mask</b>	255.255.248.0	255.255.248.0
<b>Default Gateway</b>	10.10.8.2	10.10.8.2
<b>MTU</b>	1500	1500
Public Ethernet-Pair Failover Settings		
Interface Pair	Status	
eth0-eth1	Failover Not Enabled	

Figure 5–8: MediaDirector 2202/2201 Public Ethernet Connections

Note that Interface 3 in [Figure 5–9](#) is named **bmc** (Baseboard Management Console). The BMC interface shares the same physical port as ETH0 and can be used by Technical Support for troubleshooting purposes.

In the **Public Ethernet Ports** section:

- **Interface Name:** Displays the internal name for the Ethernet port.
- **Cabling:** This displays the connection status of the Ethernet port.
- **DHCP:** Displays whether DHCP is enabled.
- **IP Address:** The IP address assigned to the Ethernet port
- **MAC Address:** The MAC address assigned to the Ethernet port
- **Subnet Mask:** The subnet mask for the Ethernet port.
- **Default Gateway:** The IP address of the default gateway assigned to the Ethernet port
- **MTU:** The maximum size of Ethernet packets.

In the **Public Ethernet Pair Failover Settings** section:

- **Interface Pair:** This field shows the failover pairs for each of the public Ethernet interfaces. For details about Ethernet failover on the MediaDirector 2252/2251 and 2202/2201, refer to [Configuring Network Settings on the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000](#).
- **Status:** Displays whether failover is configured for each failover pair, and if not, what condition may be preventing failover selection.

For instructions on configuring the Ethernet Interface settings for your MediaDirector 2252/2251 and 2202/2201, refer to [Configuring Network Settings on the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000](#).

## MediaCenter Public Ethernet Interfaces

Public Ethernet Interfaces			
Public Ethernet Ports			
Set 4 Public Ports			
Parameters	Interface 1	Interface 2	Interface 3
<b>Interface Name</b>	eth0	eth1	bmc
<b>Cabling</b>	Connected	Connected	Connected
<b>DHCP</b>	Enabled	Enabled	Enabled
<b>IP Address</b>	10.10.9.152	10.10.12.112	10.10.14.75
<b>MAC Address</b>	00:D0:28:11:03:0C	00:D0:28:11:03:0D	00:30:48:F7:5B:D8
<b>Subnet Mask</b>	255.255.248.0	255.255.248.0	255.255.248.0
<b>Default Gateway</b>	10.10.8.2	10.10.8.2	10.10.8.2
<b>MTU</b>	1500	1500	1500

Public Ethernet-Pair Failover Settings	
Interface Pair	Status
eth0-eth1	Failover Not Enabled

Figure 5–9: MediaCenter Public Ethernet Interfaces

Note that Interface 3 in [Figure 5–9](#) is named **bmc** (Baseboard Management Console). The BMC interface shares the same physical port as ETH0 and can be used by Technical Support for troubleshooting purposes.

In the **Public Ethernet Ports** section:

- **Set (4/2) Public Ports (button):** Click **Set 4 Public Ports** to configure the MIP4 and MIP5 Ethernet ports on the rear panel of the MediaCenter as public networking ports. You must restart the MediaCenter in order for the change to take effect. Once configured, the two Ethernet ports will appear as **eth2** and **eth3**. Once MIP4 and MIP5 are configured as public networking ports, you can click **Set 2 Public Ports** to reconfigure them for MediaPort connectivity. For detailed instructions, refer to [Configuring Ethernet Interfaces on the MediaCenter](#).



**CAUTION:** Do not connect the MIP4 and MIP5 interfaces to your public network unless you have followed the steps in [Configuring Ethernet Interfaces on the MediaCenter](#) to configure them for public networking. Connecting these interfaces to your network before you configure them properly may result in network problems.

- **Interface Name:** Displays the internal name for the Ethernet port. Note that the BMC interface shares the same physical port as ETH0.
- **Cabling:** This displays the connection status of the Ethernet port.
- **DHCP:** Displays whether DHCP is enabled.
- **IP Address:** The IP address assigned to the Ethernet port
- **MAC Address:** The MAC address assigned to the Ethernet port

- **Subnet Mask:** The subnet mask for the Ethernet port.
- **Default Gateway:** The IP address of the default gateway assigned to the Ethernet port
- **MTU:** The maximum size of Ethernet packets.

In the **Public Ethernet Pair Failover Settings** section:

- **Interface Pair:** This field shows the failover pairs for each of the public Ethernet interfaces. For details about Ethernet failover on the MediaCenter, refer to [Configuring Network Settings on the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000](#).
- **Status:** Displays whether failover is configured for each failover pair, and if not, what condition may be preventing failover selection.

For instructions on configuring the Ethernet Interface settings for your MediaCenter, refer to [Configuring Network Settings on the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000](#)

## Spectrum MediaDeck 7000 Public Ethernet Interfaces

Public Ethernet Interfaces		
Public Ethernet Ports		
Parameters	Interface 1	Interface 2
<b>Interface Name</b>	eth0	eth1
<b>Cabling</b>	Connected	Connected
<b>DHCP</b>	Enabled	Enabled
<b>IP Address</b>	10.10.41.67	10.10.41.68
<b>MAC Address</b>	00:D0:28:13:02:1C	00:D0:28:13:02:1D
<b>Subnet Mask</b>	255.255.252.0	255.255.252.0
<b>Default Gateway</b>	10.10.40.1	10.10.40.1
<b>MTU</b>	1500	1500
Public Ethernet-Pair Failover Settings		
Interface Pair	Status	
eth0-eth1	Failover Not Enabled	

Figure 5–10: MediaDeck 7000 Public Ethernet Interfaces

In the **Public Ethernet Ports** section:

- **Interface Name:** Displays the internal name for the Ethernet port. eth0 corresponds to the Ethernet port on Module A (on the left-hand side of chassis when facing the rear panel) and eth1 corresponds to the Ethernet port on Module B (on the right).
- **Cabling:** This displays the connection status of the Ethernet port.
- **DHCP:** Displays whether DHCP is enabled.
- **IP Address:** The IP address assigned to the Ethernet port
- **MAC Address:** The MAC address assigned to the Ethernet port
- **Subnet Mask:** The subnet mask for the Ethernet port.
- **Default Gateway:** The IP address of the default gateway assigned to the Ethernet port
- **MTU:** The maximum size of Ethernet packets.

In the **Public Ethernet Pair Failover Settings** section:

- **Interface Pair:** This field shows the failover pairs for each of the public Ethernet interfaces. For details about Ethernet failover on the MediaDeck 7000, refer to [Configuring Network Settings on the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000](#).

## Connected MediaPort Modules (for the Spectrum MediaDeck 7000)

The Connected MediaPort Modules section displays the following:

- **Name:** The name of each MediaPort module installed on the MediaDeck 7000. Click the link to open the MediaPort Properties page for the corresponding MediaPort module.
- **Status:** The network status for the displayed MediaPort Module.

Connected MediaPort Modules	
Connected MediaPort	
Name	Status
<a href="#">MIP-7XXX_01563</a>	Connected -- Error Alarm
<a href="#">MIP-7XXX_00215</a>	Connected -- Error Alarm

Figure 5–11: MediaDeck 7000 Connected MediaPort Modules

## Private Ethernet Interfaces



**NOTE:** This section applies only to MediaDirectors 2252/2251 and 2202/2201, and MediaCenters.

This section displays connection information for the MediaPort Ethernet array on the MediaDirector 2252/2251 and 2202/2201 and MediaCenter. Refer to [Figure 5–12](#).

### Private Ethernet Interfaces

Private Ethernet Ports & Connections					
Ethernet Port			Connected MediaPort		
Number	Label	IP Address	Name	Status	
0	com0	10.20.0.86	<a href="#">MIP-5321_09091</a>	Connected -- Error Alarm	
1	com1	10.20.1.2	<a href="#">MIP-5321_08598</a>	Connected -- Error Alarm	
2	com2	10.20.2.23	<a href="#">MIP-5001_01838</a>	Connected -- Error Alarm	
3	com3	10.20.3.2	<a href="#">MIP-5321_08888</a>	Connected -- Error Alarm	
4	com4	10.20.4.51	<a href="#">MIP-5001_01830</a>	Connected -- Error Alarm	
5	com5	10.20.5.79	<a href="#">MIP-5301_01518</a>	Connected -- Error Alarm	
6	com6	10.20.6.16	<a href="#">MIP-5301_01178</a>	Connected -- Error Alarm	
7	com7	10.20.7.65	<a href="#">MIP-5301_01515</a>	Connected -- Error Alarm	
8	com8	10.20.8.44	<a href="#">MIP-5321_09075</a>	Connected -- Error Alarm	
9	com9	10.20.9.86	<a href="#">MIP-5321_08553</a>	Connected -- Error Alarm	
10	com10	10.20.10.23	<a href="#">MIP-5621_08531</a>	Connected -- Error Alarm	
11	com11	10.20.11.65	<a href="#">MIP-5621_08519</a>	Connected -- Error Alarm	
12	com12	10.20.12.51	<a href="#">MIP-5321_08467</a>	Connected -- Error Alarm	
13	com13	10.20.13.72	<a href="#">MIP-5301_01204</a>	Connected -- Error Alarm	
14	com14	10.20.14.79	<a href="#">MIP-5321_08466</a>	Connected -- Error Alarm	
15	com15	10.20.15.16	<a href="#">MIP-5321_09097</a>	Connected -- Error Alarm	

Figure 5–12: Private Ethernet Interfaces for MediaDirector 2252 or 2202



**NOTE:** The MediaDirector 2252 and 2202 both have 16 private Ethernet ports, the MediaDirector 2251 and 2201 have 8 private Ethernet ports, and the MediaCenter has up to 6.

- **Ethernet Port: Number:** The number of the Ethernet interface on the MediaPort Ethernet array, which corresponds to the number indicated on the rear panel of the Spectrum video server.
- **Ethernet Port: Label:** Internal private Ethernet interface name.
- **Ethernet Port: IP Address:** IP address assigned to the Ethernet port.
- **Connected MediaPort: Name:** Name of the MediaPort attached to that Ethernet port.
- **Connected MediaPort: Status:** Connection status of the MediaPort.

## Fibre Channel Interfaces



**NOTE:** This section applies to the MediaDirectors 2100, 2101, 2102 and 2102B, and MediaDirectors 2202/2201.

This section displays fibre channel information. Refer to [Figure 5–13](#).

**Fibre Channel Interfaces**

Interface	GUID	Current State					
		Loop	Status	Port A	Port B	Speed	Mode
0	5000d028-0f000040	Nominal	OK	No Transceiver	4 Gbps	Enabled, Loop	
1	5000d028-0f000041	Nominal	OK	No Transceiver	4 Gbps	Enabled, Loop	
2	5000d028-0f000042	Not connected	No Transceiver	No Transceiver	Unknown	Enabled, Loop	
3	5000d028-0f000043	Not connected	No Transceiver	No Transceiver	Unknown	Enabled, Loop	
4	5000d028-0f000044	Not connected	No Transceiver	No Transceiver	Unknown	Enabled, Loop	
5	5000d028-0f000045	Not connected	No Transceiver	No Transceiver	Unknown	Enabled, Loop	
6	00000000-5000d028	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown Mode
7	00000000-5000d028	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown Mode

Statistics								
Interface	GUID	Requests Executed	Loop Up	Loop Down	Async Events	LIPs Initiated	LIPs Received	Link error count
0	5000d028-0f000040	2420671	1	0	4	1	1	0
1	5000d028-0f000041	2146801	1	0	4	1	1	0
2	5000d028-0f000042	0	0	0	0	0	0	0
3	5000d028-0f000043	0	0	0	0	0	0	0
4	5000d028-0f000044	0	0	0	0	0	0	0
5	5000d028-0f000045	0	0	0	0	0	0	0
6	00000000-5000d028	0	0	0	0	0	0	0
7	00000000-5000d028	0	0	0	0	0	0	0

**Figure 5–13: MediaDirector Properties—Fibre Channel Interfaces Section**

In the **Current State** section:

- **Interface:** Shows the Fibre Channel (FC) interfaces available on the selected MediaDirector.



**NOTE:** The number of interfaces displayed depends on the MediaDirector model. MediaDirector 2100 will show 2 interfaces, MediaDirector 2101 will show 3 interfaces, MediaDirector 2102 and 2102B will show 6 interfaces, and MediaDirector 2202/2201 will show 8 interfaces.

- **GUID:** Lists the GUIDs of the MediaDirector's FC interfaces.
- **Status: Loop:** shows the connection status for the fibre channel loop on the selected interface.
- **Status: Port A (and B):** Lists the status of Ports A and B on each of the FC interfaces on the MediaDirector.
- **Speed:** Lists the loop speed of the indicated FC loops (1 Gbps, 2 Gbps, or 4 Gbps, or Unknown, depending on MediaDirector model).
- **Mode:** Lists the loop status of the indicated FC loops.

In the **Statistics** section:

- **Interface:** Shows the Fibre Channel interfaces available on the selected MediaDirector.
- **GUID:** Lists the GUIDs of the MediaDirector's FC interfaces.

- **Requests Executed:** Displays the number of read/write requests issued per loop. This may be useful for FC loop troubleshooting purposes.
- **Loop Up:** Displays a number relating to the FC operational state. This may be useful for FC loop troubleshooting purposes.
- **Loop Down:** Displays a number relating to the FC operational state. This may be useful for FC loop troubleshooting purposes.
- **Async Events:** Displays the number of disruptive FC events on the loop. This may be useful for FC loop troubleshooting purposes.
- **LIPs Initiated:** Displays a number relating to Loop Initialization Protocol initiations. This may be useful for FC loop troubleshooting purposes.
- **LIPs Received:** Displays a number relating to Loop Initialization Protocol instances received on the loop. This may be useful for FC loop troubleshooting purposes.
- **Link error count:** Displays the number of transmission errors on the loop. This may be useful for FC loop troubleshooting purposes.
- **Set FC Loop Speed to (1 Gbps, 2 Gbps or 4 Gbps)** button: The loop speed shown on this button will vary according to the MediaDirector and to what is already configured. Click to change the FC loop speed for all loops. Reboot the MediaDirector for the change to take place.



**NOTE:** The FC Loop Speed setting must match the physical DIP switch setting on the attached MediaStores. If you need to reset the settings, you must power cycle the MediaStore(s) before the new settings take effect.

For information on supported loop speeds, refer to “Configuring the Fibre Channel Loop Speed between MediaDirector and MediaStore” in the *Spectrum Hardware Orientation Guide*.

Refer to “Configuring the MediaStore Fibre Channel Loop Speed” in the *Spectrum System Getting Started Guide*.

## Environment

This section displays environmental statistics for the Spectrum video server. These fields will vary depending on the type of Spectrum video server you are viewing. For MediaDirectors 2100, 2101, 2102 and 2102B, refer to [Figure 5–14](#). For MediaDirectors 2252/2251 and 2202/2201, refer to [Figure 5–15](#). For MediaCenters, refer to [Figure 5–16](#). For the MediaDeck 7000, refer to [Figure 5–17](#).

Environment:		
Power Supplies		
<b>PS 0</b>	NORMAL	
<b>PS 1</b>	NORMAL	
<b>RTC Battery</b>	NORMAL	
<b>RAM Battery</b>	CHARGING	
Voltage Levels		
<b>1.20V Line</b>	1.17 Volts	( Range: 1.16 - 1.24 )
<b>1.80V Line</b>	1.78 Volts	( Range: 1.75 - 1.85 )
<b>PHY 1.8V Line</b>	1.93 Volts	( Range: 1.89 - 2.01 )
<b>2.50V Line</b>	2.48 Volts	( Range: 2.42 - 2.58 )
<b>3.30V Line</b>	3.23 Volts	( Range: 3.20 - 3.40 )
<b>5.00V Line</b>	4.97 Volts	( Range: 4.85 - 5.15 )
<b>12V Line1</b>	11.95 Volts	( Range: 9.00 - 12.50 )
<b>12V Line2</b>	11.95 Volts	( Range: 9.00 - 12.50 )
<b>Bat VCHG</b>	4.39 Volts	( Range: 3.50 - 4.75 )
<b>Fan0 Voltage</b>	1.76 Volts	( Range: 1.25 - 2.50 )
<b>Fan1 Voltage</b>	2.27 Volts	( Range: 1.25 - 2.50 )
Temperatures		
<b>Mainboard Int</b>	25 Celsius	( Range: 10 - 38 )
<b>Power Supply Int</b>	26 Celsius	( Range: 10 - 38 )
<b>Mainboard Ext</b>	52 Celsius	( Range: 10 - 60 )
<b>Power Supply Ext</b>	36 Celsius	( Range: 10 - 60 )
Fans		
<b>Fan 0</b>	8653 RPM	( Range: 4000 - 10000 )
<b>Fan 1</b>	8881 RPM	( Range: 4000 - 10000 )
<b>Fan 2</b>	6490 RPM	( Range: 4000 - 10000 )
<b>Fan 3</b>	6617 RPM	( Range: 4000 - 10000 )
<b>Fan 4</b>	6250 RPM	( Range: 4000 - 10000 )
<b>Fan 5</b>	6617 RPM	( Range: 4000 - 10000 )

Figure 5-14: (MediaDirectors 2100, 2101, 2102, and 2102B) MediaDirector Properties—Environment Section

Environment:		
Power Supplies		
<b>PS 0</b>	NORMAL	
<b>PS 1</b>	NORMAL	
Voltage Levels		
<b>Comm 1.0V</b>	1.00 Volts	( Range: 0.90 - 1.10 )
<b>Comm 1.5V</b>	1.48 Volts	( Range: 1.35 - 1.65 )
<b>Comm 1.8V</b>	1.79 Volts	( Range: 1.62 - 1.98 )
<b>Comm 2.5V</b>	2.48 Volts	( Range: 2.25 - 2.75 )
<b>Comm 3.3V</b>	3.35 Volts	( Range: 2.97 - 3.63 )
<b>Comm 12V</b>	11.89 Volts	( Range: 9.00 - 13.20 )
<b>Env 3.3V</b>	3.42 Volts	( Range: 2.97 - 3.63 )
<b>Env 5.0V</b>	5.18 Volts	( Range: 4.50 - 5.50 )
<b>Env 12V</b>	12.21 Volts	( Range: 9.00 - 13.20 )
<b>FC0 1.0V</b>	1.02 Volts	( Range: 0.90 - 1.10 )
<b>FC0 1.8V</b>	1.81 Volts	( Range: 1.62 - 1.98 )
<b>FC0 2.5V</b>	2.52 Volts	( Range: 2.25 - 2.75 )
<b>FC0 3.3V</b>	3.30 Volts	( Range: 2.97 - 3.63 )
<b>FC0 12V</b>	12.08 Volts	( Range: 9.00 - 13.20 )
<b>FC1 1.0V</b>	1.01 Volts	( Range: 0.90 - 1.10 )
<b>FC1 1.8V</b>	1.81 Volts	( Range: 1.62 - 1.98 )
<b>FC1 2.5V</b>	2.50 Volts	( Range: 2.25 - 2.75 )
<b>FC1 3.3V</b>	3.28 Volts	( Range: 2.97 - 3.63 )
<b>FC1 12V</b>	12.02 Volts	( Range: 9.00 - 13.20 )
Temperatures		
<b>Front Panel</b>	19 Celsius	( Range: 10 - 45 )
<b>Comm Out</b>	32 Celsius	( Range: 10 - 70 )
<b>FC0 In</b>	44 Celsius	( Range: 10 - 55 )
<b>FC0 Out</b>	54 Celsius	( Range: 10 - 70 )
<b>FC1 In</b>	39 Celsius	( Range: 10 - 55 )
<b>FC1 Out</b>	43 Celsius	( Range: 10 - 70 )
<b>Env In</b>	24 Celsius	( Range: 10 - 63 )
<b>Server Cores</b>	37 Celsius	( Range: 10 - 84 )
Fans		
<b>Fan 0</b>	3298 RPM	( Range: 2200 - 12000 )
<b>Fan 1</b>	2441 RPM	( Range: 2200 - 12000 )
<b>Fan 2</b>	3390 RPM	( Range: 2200 - 12000 )
<b>Fan 3</b>	2417 RPM	( Range: 2200 - 12000 )
<b>Fan 4</b>	3255 RPM	( Range: 2200 - 12000 )
<b>Fan 5</b>	2569 RPM	( Range: 2200 - 12000 )

Figure 5-15: MediaDirector 2252/2251 and 2202/2201 Properties—Environment Section

Environment:		
Power Supplies		
<b>PS0</b>	NORMAL	
<b>PS1</b>	NORMAL	
Voltage Levels		
<b>MB CPU Vcore</b>	1.00 Volts	( Range: 0.60 - 1.49 )
<b>MB DIMM</b>	1.59 Volts	( Range: 1.20 - 1.65 )
<b>MB 1.5V</b>	1.51 Volts	( Range: 1.35 - 1.65 )
<b>MB 3.3V</b>	3.29 Volts	( Range: 2.95 - 3.67 )
<b>MB 3.3VSB</b>	3.25 Volts	( Range: 2.95 - 3.67 )
<b>MB 5.0V</b>	5.15 Volts	( Range: 4.52 - 6.32 )
<b>MB 12V</b>	12.23 Volts	( Range: 9.00 - 13.20 )
<b>MB VBAT</b>	3.24 Volts	( Range: 2.95 - 3.67 )
<b>MRAM 1.2V</b>	1.19 Volts	( Range: 1.08 - 1.32 )
<b>MRAM 1.5V</b>	1.48 Volts	( Range: 1.35 - 1.65 )
<b>MRAM 2.5V</b>	2.48 Volts	( Range: 2.25 - 2.75 )
<b>MRAM 3.3V</b>	3.30 Volts	( Range: 2.97 - 3.63 )
<b>MRAM 5.0V</b>	5.05 Volts	( Range: 4.50 - 5.50 )
<b>MRAM 12V</b>	12.08 Volts	( Range: 9.00 - 13.20 )
Temperatures		
<b>MB Temp2</b>	56 Celsius	( Range: 10 - 70 )
<b>MB In</b>	30 Celsius	( Range: 10 - 55 )
<b>MRAM In</b>	31 Celsius	( Range: 10 - 60 )
<b>MRAM Out</b>	34 Celsius	( Range: 10 - 60 )
Fans		
<b>Fan 0</b>	4326 RPM	( Range: 2200 - 10000 )
<b>Fan 1</b>	4326 RPM	( Range: 2200 - 10000 )
<b>Fan 2</b>	4326 RPM	( Range: 2200 - 10000 )

Figure 5–16: MediaCenter Properties—Environment Section

Environment:		
Power Supplies		
<b>Power Supply 0</b>	NORMAL	
<b>Power Supply 1</b>	NORMAL	
Voltage Levels		
<b>Mid 1.0V</b>	0.99 Volts	( Range: 0.90 - 1.10 )
<b>Mid 1.2V</b>	1.20 Volts	( Range: 1.15 - 1.23 )
<b>Mid 1.8V</b>	1.81 Volts	( Range: 1.62 - 1.90 )
<b>Mid 2.5V</b>	2.47 Volts	( Range: 2.25 - 2.75 )
<b>Mid 3.3V</b>	3.25 Volts	( Range: 2.97 - 3.63 )
<b>Mid 5.0V</b>	4.97 Volts	( Range: 4.50 - 5.50 )
<b>Mid 12.0V</b>	12.00 Volts	( Range: 9.00 - 13.20 )
Temperatures		
<b>Power Supply 0</b>	33 Celsius	( Range: 0 - 60 )
<b>Power Supply 1</b>	36 Celsius	( Range: 0 - 60 )
<b>Mid CPU 0</b>	32 Celsius	( Range: 0 - 90 )
<b>Mid CPU 1</b>	30 Celsius	( Range: 0 - 90 )
<b>Mid Board HM</b>	27 Celsius	( Range: 0 - 55 )
<b>Mid Enet IC</b>	103 Celsius	( Range: 0 - 150 )
<b>Mid Slot0 Intake</b>	28 Celsius	( Range: 0 - 55 )
<b>Mid Slot1 Intake</b>	36 Celsius	( Range: 0 - 55 )
<b>Slot 0</b>	68 Celsius	( Range: 0 - 75 )
<b>Slot 1</b>	68 Celsius	( Range: 0 - 75 )
Fan Controllers		
<b>Slot 0</b>	136	( Range: 128 - 255 )
<b>Slot 1</b>	140	( Range: 128 - 255 )
Fans		
<b>Slot 0 Fan 0-A</b>	5201 RPM	( Range: 1500 - 18500 )
<b>Slot 0 Fan 0-B</b>	3879 RPM	( Range: 1500 - 18500 )
<b>Slot 0 Fan 1-A</b>	5201 RPM	( Range: 1500 - 18500 )
<b>Slot 0 Fan 1-B</b>	3814 RPM	( Range: 1500 - 18500 )
<b>Slot 0 Fan 2-A</b>	5201 RPM	( Range: 1500 - 18500 )
<b>Slot 0 Fan 2-B</b>	3879 RPM	( Range: 1500 - 18500 )
<b>Slot 1 Fan 3-A</b>	5722 RPM	( Range: 1500 - 18500 )
<b>Slot 1 Fan 3-B</b>	4401 RPM	( Range: 1500 - 18500 )
<b>Slot 1 Fan 4-A</b>	6185 RPM	( Range: 1500 - 18500 )
<b>Slot 1 Fan 4-B</b>	4318 RPM	( Range: 1500 - 18500 )
<b>Power Supply 0</b>	2400 RPM	( Range: 0 - 10000 )
<b>Power Supply 1</b>	2100 RPM	( Range: 0 - 10000 )

Figure 5–17: MediaDeck 7000—Environment Section

### Power Supplies

- **PS 0, PS 1:** Describes the state of the indicated power supply.
  - **NORMAL** = the power supply is OK

- FAILED-Absent/Unpowered** = the power supply is not delivering power, or is not plugged in.
  - BAD** = the power supply has a hardware fault and is broken.
- **RTC Battery:** Describes the state of the Clock Battery.
  - NORMAL** = the battery is OK.
  - BAD-Malfunctioning** = the battery is dead or absent.
- **RAM Battery:** Describes the state of the RAM battery.
  - NORMAL** = the battery is OK.
  - CHARGING** = the battery is charging
  - BAD-Malfunctioning** = the battery is dead or absent.
- **1394 PHY:** Describes the state of the power supply for the 1394 buses
  - NORMAL** = the power supply is OK.
  - BAD** = there is a supply failure, or the system is unable to read supply status.

### Voltage Levels



**NOTE:** The values in this section are displayed in volts. The valid ranges are also displayed. Note that these ranges are not user configurable.

#### (For MediaDirectors 2100, 2101, 2102, and 2102B)

**1.5V Line through Fan1 Voltage:** Displays the combined voltages present on the outputs of the power supply.

#### (For MediaDirector 2202 only)

**Comm 1.0V through FC1 12V:** Displays the values of the various voltage rails present on the MediaDirector.

#### (For MediaCenters)

- **MB CPU Vcore through MB VBAT:** Displays the values of the various voltage rails present on the MediaCenter motherboard.
- **MRAM 1.2V through MRAM 12V:** Displays the values of the various voltage rails present on the Harmonic MRAM expansion card.

#### (For MediaDeck 7000)

**Mid 1.0V through Mid 12.0V:** Displays the values of the various voltage rails present on the MediaDeck 7000.

### Temperatures



**NOTE:** The values in this section are always displayed in degrees centigrade. The valid range is also displayed. Note that this range is not user configurable.

#### (For MediaDirectors 2100, 2101, 2102, and 2102B)

- **Mainboard Int:** Displays the incoming or ambient temperature for the mainboard section of the chassis.
- **Power Supply Int:** Displays the incoming or ambient temperature for the power supply section of the chassis.

- **Mainboard Ext:** Displays the outgoing or exhaust temperature for the mainboard section of the chassis.
- **Power Supply Ext:** Displays the outgoing or exhaust temperature for the power supply section of the chassis.

**(For MediaDirectors 2252/2251 and 2202/2201)**

- **Front Panel:** Displays the incoming or ambient temperature for the front panel section of the chassis.
- **Comm Out:** Displays the outgoing air temperature over the mainboard of the system.
- **FC0 In:** Displays the internal air temperature over the Fibre Channel 0 board of the system.
- **FC0 Out:** Displays the outgoing air temperature over the Fibre Channel 0 board of the system.
- **FC1 In:** Displays the internal air temperature over the Fibre Channel 1 board of the system.
- **FC1 Out:** Displays the outgoing air temperature over the Fibre Channel 1 board of the system.
- **Env In:** Displays the incoming air temperature over the environmental board section temperature over the Fibre Channel 1 section of the chassis.
- **Server Cores:** Displays the aggregate air temperature over the CPU section of the system.

**(For MediaCenters)**

- **MB Temp2, MB In:** Display the temperatures of various sensors on the motherboard.
- **MRAM In, MRAM Out:** Display the incoming and outgoing air temperatures over the MRAM board respectively.

**(For MediaDeck 7000)**

- **Power Supply 0:** Displays the temperature of the sensor for power supply 0.
- **Power Supply 1:** Displays the temperature of the sensor for power supply 1.
- **Mid CPU 0:** Displays the temperature of the sensor for Mid CPU 0.
- **Mid CPU 1:** Displays the temperature of the sensor for Mid CPU 1.
- **Mid Board HM:** Displays the temperature of the sensor for the midplane.
- **Mid Enet IC:** Displays the temperature of the sensor for Ethernet device.
- **Mid Slot0 Intake:** Displays the incoming air temperature for MediaPort slot 0.
- **Mid Slot1 Intake:** Displays the incoming air temperature for MediaPort slot 1.
- **Slot 0:** Displays the aggregate air temperature for MediaPort slot 0.
- **Slot 1:** Displays the aggregate air temperature for MediaPort slot 1.

**Fan Controllers (for MediaDeck 7000)**

This section provides the control value to be used to set the fan speed for each MediaPort slot.

**Fans**

This section lists the speed (in RPM) of each of the Spectrum video server fans. The valid range is also displayed. Note that this range is not user configurable.

## Changing a Spectrum Video Server Host Name

Renaming a Spectrum video server may help you locate a particular video server host throughout the SystemManager application.

**To change a Spectrum video server host name:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click an individual host icon (not the dual host icon) to display the **Physical Configuration** page for the selected Spectrum video server host.
3. Click the Spectrum video server picture to display the host's **Properties** page.
4. In the **Host Name** field, click **Change** to display the **Change MediaDirector/MediaCenter Name** page.
5. Type the new name in the text box.

Refer to [About Naming Files and System Elements](#) for proper naming conventions.

6. Click **Save** to return to the **Properties** page.

The new host name now appears in the **System** diagram, in various page titles and in other MediaDirector-related fields throughout the application.

## Viewing or Changing MediaDirector IP Settings on the MediaDirector 2100, 2101, 2102, or 2102B



**CAUTION:** If you mis-configure any of the IP settings, you risk losing communication with the MediaDirector. This may require that you contact Technical Support.

---



**IMPORTANT:** Consult your network administrator before modifying the Ethernet settings on your MediaDirector.

---

**To view or change IP Settings associated with a MediaDirector:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click an individual host **MediaDirector** icon (not the dual host icon) to display the **MediaDirector Physical Configuration** page for the selected MediaDirector host.
3. Click the MediaDirector's picture to display the host's **MediaDirector Properties** page.
4. Click **IP Setting** to display the **IP Settings** page (see [Figure 5-18](#)).

**IP Settings on D7-01275H0**

**WARNING:** Changing these IP address settings may cause the device to become non-responsive. Do so only when you are absolutely certain of what you are doing.  
 Double check your entries **before** clicking the Update button.  
 After making changes you may have to reboot the device.  
 You may also have to remove the device from the Manager (use the Remove Device function on the Diagnostics Screen), and let the Manager re-quire the device at its new IP address.  
 NOTE: You may not be able to change these settings if the Manager is not on the same IP sub-net as the device being modified.

Name	D7-01275H0
Status	Connected
Ethernet MAC	00:D0:28:0B:02:24
IP Address Configuration	Use <input type="button" value="DHCP"/>
<b>Settings retrieved from the DHCP server:</b>	
IP Address	10.10.1.60
IP Network Mask	255.255.248.0
IP Gateway	10.10.0.2
NTP Server 0	10.35.79.15
NTP Server 1	0.0.0.0
<b>Static (User-settable) settings stored in device's Non-Volatile Memory:</b>	
IP Address	<input type="text" value="10.10.7.76"/>
IP Network Mask	<input type="text" value="255.255.248.0"/>
IP Gateway	<input type="text" value="10.10.0.2"/>
NTP Server 0	<input type="text" value="0.0.0.0"/>
NTP Server 1	<input type="text" value="0.0.0.0"/>
DNS Server 0	<input type="text" value="10.10.1.91"/>
DNS Server 1	<input type="text" value="0.0.0.0"/>

---

Make changes to the IP settings, then click the **Update** button to make the changes take effect.  
 Click the **Reset** button to reset the IP settings to reflect the last known MediaDirector settings.  
 Click the **Done** button to return to the device properties screen.

**Figure 5–18: IP Settings**

From the IP Settings page, you can view or input the following information:

- **Name:** Lists the selected MediaDirector host name.
- **Status:** Describes the MediaDirector host's current status, such as "Connected," "Configuring," "Rebooting," "Not Responding," etc.
- **Ethernet MAC:** Lists the MediaDirector's MAC (Medium Access Control) address.
- **IP Address Configuration:** Select the method by which the MediaDirector gets its IP address. There are two choices available:
  - When **DHCP** is selected, the MediaDirector looks for a DHCP server on Ethernet and receives its IP address from that. Typically, this is the vDHCP service that is running on the Manager Platform. This is the default factory configuration. IP values are displayed in the "**Settings Retrieved from DHCP Server**" section of the **Change IP Settings** page.
  - When **Static IP** is selected, the MediaDirector uses the IP address that is stored in its non-volatile memory. The non-volatile memory can be set using the fields in the "**Static (User-settable) Settings**" section of the **Change IP Settings** page.

In the **Settings Retrieved from DHCP Server** section:

- Shows the IP data that the MediaDirector has retrieved from the DHCP server. If you have selected DHCP, these settings are those that apply to the selected MediaDirector host. These values can be modified by changing setting in the DHCP server; if you are not using the SystemManager's vDHCP server, see your Network Administrator for assistance.

In the **Static (User-settable) Settings** section:

- Here you can manually enter the static IP settings, including the DNS Server IP address of an Omneon MediaGrid for Spectrum-Omneon MediaGrid communication.
- 5. Click **Update** to save any changes.

## Configuring Ethernet Interfaces on the MediaCenter

By default, the MIP4 and MIP5 Ethernet ports on the rear panel of the MediaCenter are configured for MediaPort connectivity. However, the MediaCenter allows you to configure these ports for public networking, and reconfigure them at any time.



**CAUTION:** Do not connect the MIP4 and MIP5 interfaces to your public network unless you have followed the steps in this section to configure them for public networking. Connecting these interfaces to your network before you configure them properly may result in network problems.

**To configure the MIP4 and MIP5 interfaces for public networking:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click an individual host **MediaCenter** icon to display the **MediaCenter Physical Configuration** page for the selected MediaCenter host.
3. Click the **MediaCenter** icon to display the **MediaCenter Properties** page.
4. Scroll to the **Public Ethernet Interfaces** section. If the MIP4 and MIP5 ports have not been configured for public networking yet, the button will read **Set 4 Public Ports**.
5. Click **Set 4 Public Ports**.
6. A confirmation appears indicating that a reboot is required in order for the changes to take effect. Click **OK**.
7. Restart the MediaCenter by clicking the **Reboot** button in the General Properties section of the page.
8. Once the MediaCenter has restarted, verify that **eth2** and **eth3** interfaces appear in the **Public Ethernet Interfaces** section of the **MediaCenter Properties** page.

The button under Public Ethernet Ports will now read **Set 2 Public Ports**. If you wish to reconfigure MIP4 and MIP5 for MediaPort connectivity, you can click this button and restart the MediaCenter for the changes to take effect.

## Configuring Network Settings on the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000

This section includes the following:

- [\*About Ethernet Failover and Bandwidth\*](#)
- [\*Planning and Configuring your Network Settings\*](#)
- [\*Configuring Ethernet Interfaces for Failover\*](#)

- [Configuring Additional Routes](#)
- [Changing the Primary IP Address](#)



**CAUTION:** Consult your network administrator before modifying the Ethernet settings on your Spectrum video server. If you mis-configure any of the Ethernet settings on your Spectrum video server, you risk losing communication with that device. This may require that you contact Technical Support.

## About Ethernet Failover and Bandwidth

The MediaDirectors 2252/2251 and 2202/2201, MediaCenter, and MediaDeck 7000 allow you to configure your Ethernet interfaces in failover pairs to provide added reliability in the event of a hardware failure. When a pair of Ethernet interfaces are configured in failover mode and one of the interfaces experiences a failure, the remaining interface takes over the Ethernet traffic of the failed interface in addition to its own packets. Take note of the following:

- If both interfaces in a failover pair are up, you will get two interfaces worth of incoming and outgoing bandwidth.
- Once a failover has occurred, the total bandwidth (both the incoming and outgoing bandwidth) is limited to one interface worth of packets.

## Planning and Configuring your Network Settings



**IMPORTANT:** Please read the following section before configuring your Ethernet network.

When planning an Ethernet network with an MediaDirector 2252/2251 and 2202/2201, MediaCenter, or MediaDeck 7000 consider the following:

- Spectrum video servers do not ship with Ethernet interfaces configured for failover. Interface failover must be configured using SystemManager.
- You can assign multiple Ethernet interfaces on your Spectrum video server to the same IP subnet. To a great extent, you can use those interfaces independently and the maximum bandwidth will be limited by the number of interfaces.
- To maximize bandwidth, you must connect to the Spectrum video server in such a way that each client PC points to a different interface on the Spectrum video server. If multiple client PCs are connected to all the different Ethernet interfaces on the Spectrum video server, then bandwidth can be distributed across the different interfaces. Whereas, if the client PCs are all connected to one interface, bandwidth is limited by that one interface. Therefore, distributing the network traffic is your responsibility when setting up the network.
- If you initiate a file transfer from a given Ethernet interface on a client PC to a specific interface on the Spectrum video server, it will always use the same interface to return packets, and will send them directly to the same interface on the client PC that initiated the transfer.
- For the MediaDeck 7000, both MediaPort Modules must be installed in order to enable failover.

**To configure the network settings for your MediaDirector 2252/2251 and 2202/2201, MediaCenter, or MediaDeck 7000:**

1. From the **System Diagram**, click any Spectrum video server heading (or icon) to reach the **Physical Configuration** page.
2. Click the picture of the Spectrum video server to display the **Properties** page.

3. In the Host Properties section of the page, in the **Change Settings** field, click **Network Settings**. The Network Settings page for your Spectrum video server appears.

The **DNS/NTP Settings** section, shown in *Figure 5-19*, allows you to enter information about your DNS and NTP servers.

The screenshot shows the 'Network Settings' page for a device named 'D8\_00108'. The 'DNS/NTP Settings' section contains four input fields: 'DNS Server 0' (10.5.10.19), 'DNS Server 1' (empty), 'NTP Server 0' (10.4.166.202), and 'NTP Server 1' (empty). A 'Save DNS/NTP Settings' button is at the bottom.

DNS/NTP Settings	
DNS Server 0	10.5.10.19
DNS Server 1	
NTP Server 0	10.4.166.202
NTP Server 1	

Save DNS/NTP Settings

**Figure 5-19: DNS/NTP Settings**



**IMPORTANT:** You must designate a fully-functioning and properly-configured NTP server for the Spectrum video server. Failure to do so will result in video disruption.

4. To configure DNS or NTP Settings, in the **DNS/NTP Settings** section of the page, enter the appropriate IP addresses for the following DNS or NTP servers:
  - **DNS Server 0**
  - **DNS Server 1**
  - **NTP Server 0**
  - **NTP Server 1**



**NOTE:** If you enter DNS information, make sure that you also define the name and IP address of the Spectrum video server in the DNS server. Failure to do so will result in CIFS connection delays of up to 30 seconds or more.

5. The **DNS Search Settings** section, shown in *Figure 5-20*, allows you to enter up to four static DNS search domain names, to be used by DNS when resolving network domain names in more complicated networks.

The screenshot shows the 'Network Settings' page for a device named 'D8\_00108'. The 'DNS Search Settings' section contains four input fields for 'DNS Search Domains' (all empty). A 'Save DNS Search Domains' button is at the bottom.

DNS Search Settings			
DNS Search Domains			

Save DNS Search Domains

**Figure 5-20: DNS Search Settings**

To configure DNS Search Settings, enter the DNS Search Domain name(s) (for example, **acme.local**), and then click **Save DNS Search Domains**.

- The **MediaPort IP Address Range Settings** section, shown in [Figure 5–21](#), displays the default IP address range that the video server uses for assigning IP addresses to the connected MediaPorts. The IP addresses of those MediaPorts are shown in the **Private Ethernet Interfaces** section of the **Properties** page.

The screenshot shows a configuration window titled "Mediaport IP Address Range Settings". It contains a single input field labeled "Mediaport IP Base Address" with the value "10.20.0.0" and a "Save Mediaport Base Address" button below it.

**Figure 5–21: Mediaport IP Address Range Settings**



**IMPORTANT:** Do not modify this field unless instructed by Technical Support.



**NOTE:** This feature does not apply to the MediaDeck 7000.

If, for some reason, you need to change this default IP address range, enter the new IP address range in the **Mediaport IP Base Address** field, and then click **Save Mediaport Base Address**. Once the new range is set, you must restart both the Spectrum video server and all the attached MediaPorts in order for the new IP addresses to take effect.

- The **Ethernet Interface Settings** section, shown in [Figure 5–22](#), allows you to configure network settings for each Ethernet Interface.

The screenshot shows a configuration window titled "Ethernet Interface Settings". It features a table with two columns for "Interface 1" (eth0) and "Interface 2" (eth1). The table includes fields for Parameters, Interface Name, Cabling, MAC Address, MTU, DHCP, IP Address, Subnet Mask, and Default Gateway. The "IP Address" field for Interface 1 is set to "10.1.1.242". The "Save Interface Settings" and "Restore Default Settings" buttons are at the bottom.

Parameters	Interface 1	Interface 2
Interface Name	eth0	eth1
Cabling	Connected	Disconnected
MAC Address	00:D0:28:0F:02:E8	00:D0:28:0F:02:E9
MTU	1500	1500
DHCP	<input type="checkbox"/>	<input type="checkbox"/>
IP Address	10.1.1.242	
Subnet Mask	255.255.255.0	
Default Gateway	10.1.1.1	

**Figure 5–22: Ethernet Interface Settings**

For examples of some standard configurations, refer to [Examples of Basic Ethernet Interface Configurations](#). Configure the following fields as necessary:

- MTU:** This field may be used to change the maximum size of Ethernet packets.



**NOTE:** At this time, Harmonic does not recommend changing the default packet size of 1500 bytes.

- DHCP:** Check or uncheck to enable or disable DHCP.
- IP Address:** When DHCP is disabled, this field may be used to enter a static IP address.



**IMPORTANT:** Changing the primary IP address for the Spectrum video server will cause SystemManager to lose connection with it. If you wish to change the primary IP address, follow the instructions in [Changing the Primary IP Address](#). Note that the primary IP address is displayed next to the name of the Spectrum video server host on the [System Diagram](#) page.

- **Subnet Mask:** When DHCP is disabled, this field may be used to enter a subnet mask.
- **Default Gateway:** When DHCP is disabled, this field may be used to enter a default gateway.
- 8. Click **Save Interface Settings** to save the current settings. If you wish restore the default settings at any time, click **Restore Default Settings**.



**NOTE:** Once you have configured the Ethernet interfaces on your Spectrum video server, Harmonic recommends that you ping each interface to verify that it is configured properly.

9. The **Configure Additional Routes** section allows you to specify routing configurations for individual Ethernet interfaces other than the default route. This is only necessary for more complex network configurations. For detailed instructions on configuring additional routes, refer to [Configuring Additional Routes](#).
10. The **Ethernet Interface Failover Settings** section allows you to configure failover settings for the Ethernet interfaces. For detailed instructions on configuring failover settings, refer to [Configuring Ethernet Interfaces for Failover](#).
11. Once you have finished configuring your network settings, click **Done** to save your settings.

### Examples of Basic Ethernet Interface Configurations

The following examples show some standard network configurations of the MediaDirector 2252/2251 and 2202/2201 and MediaCenter. For examples of failover configurations, refer to [Examples of Failover Configurations](#).

#### Example 1—Static IP Address

In this example, only one Ethernet interface, eth0, is connected. This interface is configured with a static IP address. No expansion cards are installed in this example.

Ethernet Interface Settings		
Parameters	Interface 1	Interface 2
<b>Interface Name</b>	eth0	eth1
<b>Cabling</b>	Connected	Disconnected
<b>MAC Address</b>	00:D0:28:0F:02:E8	00:D0:28:0F:02:E9
<b>MTU</b>	1500	1500
<b>DHCP</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>IP Address</b>	10.1.1.242	
<b>Subnet Mask</b>	255.255.255.0	
<b>Default Gateway</b>	10.1.1.1	
<b>Save Interface Settings</b>		<b>Restore Default Settings</b>

Figure 5–23: Example of One Interface, Static IP

### Example 2—DHCP

In this example, only one Ethernet interface, eth0, is connected. This interface is configured for DHCP. No expansion cards are installed in this example.

Ethernet Interface Settings			
Parameters	Interface 1	Interface 2	
<b>Interface Name</b>	eth0	eth1	
<b>Cabling</b>	Connected	Disconnected	
<b>MAC Address</b>	00:D0:28:0F:02:E8	00:D0:28:0F:02:E9	
<b>MTU</b>	1500	1500	
<b>DHCP</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>IP Address</b>	192.168.1.152		
<b>Subnet Mask</b>	255.255.255.0		
<b>Default Gateway</b>	192.168.1.1		

Figure 5–24: Example of One Interface, DHCP

### Example 3—Static IP Address and DHCP with Expansion Card

In this example, a 10 Gb dual port expansion card is installed in the MediaDirector 2202/2201, and three interfaces are connected. Two are configured with static IP addresses, and one is configured for DHCP.

Ethernet Interface Settings				
Parameters	Interface 1	Interface 2	Interface 3	Interface 4
<b>Interface Name</b>	eth0	eth1	ixeth0	ixeth1
<b>Cabling</b>	Connected	Disconnected	Connected	Connected
<b>MAC Address</b>	00:D0:28:0F:00:78	00:D0:28:0F:00:79	00:D0:28:0F:00:7E	00:D0:28:0F:00:7F
<b>MTU</b>	1500	1500	1500	1500
<b>DHCP</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>IP Address</b>	10.1.1.156		192.168.1.185	10.2.1.138
<b>Subnet Mask</b>	255.255.255.0		255.255.255.0	255.255.255.0
<b>Default Gateway</b>	10.1.1.1			

Figure 5–25: Example of Three Interfaces Using Static IP Addresses and DHCP

Note that in this example, each interface provides access to a separate subnet.

### Example 4—Static IP Addresses with Expansion Card

In this example, a 1 Gb quad port expansion card is installed in the MediaDirector 2202/2201, and five interfaces are connected. One interface on the main board is configured for DHCP, while all four interfaces on the expansion card are configured with static IP addresses.

Ethernet Interface Settings						
Parameters	Interface 1	Interface 2	Interface 3	Interface 4	Interface 5	Interface 6
Interface Name	eth0	eth1	eth2	eth3	eth4	eth5
Cabling	Connected	Disconnected	Connected	Connected	Connected	Connected
MAC Address	00:D0:28:0F:00:60	00:D0:28:0F:00:61	00:D0:28:0F:00:62	00:D0:28:0F:00:63	00:D0:28:0F:00:64	00:D0:28:0F:00:65
MTU	1500	1500	1500	1500	1500	1500
DHCP	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IP Address	192.168.1.196		10.1.1.103	10.1.1.102	10.1.1.104	10.1.1.109
Subnet Mask	255.255.255.0		255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0
Default Gateway	192.168.1.1					

[Save Interface Settings](#)      [Restore Default Settings](#)

**Figure 5–26: Example of Five Interfaces: One DHCP and Four Static IP Addresses**

Note that in this example, bandwidth for FTP transfers can be maximized by connecting a separate client PC to each of the different ethernet interfaces to distribute the load. This network distribution is the responsibility of the user when setting up the network.

## Configuring Ethernet Interfaces for Failover

When configuring Ethernet interfaces for failover, note the following important points:

- For the MediaDirector 2252/2251 and 2202/2201, failover may be configured only between the following pairs of Ethernet interfaces:
  - **eth0** and **eth1** (the main public Ethernet interfaces on the MediaDirector 2202/2201)
  - **ixeth0** and **ixeth1** (interfaces on the dual port expansion card)
  - **eth2** and **eth3** (interfaces on the quad port expansion card)
  - **eth4** and **eth5** (interfaces on the quad port expansion card)
- For the MediaCenter, failover may be configured between the following pairs of Ethernet interfaces:
  - **eth0** and **eth1** (the main public Ethernet interfaces on the MediaCenter)
  - **eth2** and **eth3** (only available if you have configured the MIP 4 and MIP 5 interfaces for public networking. See [Configuring Ethernet Interfaces on the MediaCenter](#) for details.)
- For the MediaDeck 7000, failover may be configured between the following pair of Ethernet interfaces:
  - **eth0** and **eth1** (interfaces on the installed MediaPort Modules)



**TIP:** The interface names in the above lists are found in the **Interface Name** field of the Ethernet Settings page.

- Failover pairs must be cabled and assigned to the same IP subnet.
- IP addresses for failover pairs must be statically assigned (that is, DHCP should be disabled).
- There can be one or more failover pairs per IP subnet.

### To configure Ethernet interfaces for failover:

1. From the **System Diagram**, click any Spectrum video server heading (or icon) to reach the **Physical Configuration** page.

2. Click the picture of the Spectrum video server to display the **Properties** page.
3. In the **Host Properties** section of the page, in the **Change Settings** field, click **Network Settings**. The **Network Settings** page for your Spectrum video server appears.
4. Scroll to the **Ethernet Interface Settings** section of the page.
5. Make sure that each pair of interfaces you are configuring for failover are configured with static IP and are on the same subnet.
6. If you have made changes in the **Ethernet Interface Settings** section of the page, save your settings by clicking **Save Settings**.
7. In the **Ethernet Interface Failover Settings** section of the page, select the interface pair(s) for which you want to enable failover mode, and then click **Enable Failover Mode**.
8. Verify that the text in the **Status** column changes to **Failover Enabled**.

The examples in the following section show some possible failover configurations.

## Examples of Failover Configurations

### Example 1—One Failover Pair

In this example, a 1 Gb quad port expansion card is installed in the MediaDirector 2202/2201, and three interfaces are connected. The eth2 and eth3 interfaces are configured for failover. Note that these interfaces are configured with static IP addresses and are assigned to the same IP subnet.

Ethernet Interface Settings						
Parameters	Interface 1	Interface 2	Interface 3	Interface 4	Interface 5	Interface 6
<b>Interface Name</b>	eth0	eth1	eth2	eth3	eth4	eth5
<b>Cabling</b>	Connected	Disconnected	Connected	Connected	Disconnected	Disconnected
<b>MAC Address</b>	00:D0:28:0F:00:60	00:D0:28:0F:00:61	00:D0:28:0F:00:62	00:D0:28:0F:00:63	00:D0:28:0F:00:64	00:D0:28:0F:00:65
<b>MTU</b>	1500	1500	1500	1500	1500	1500
<b>DHCP</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>IP Address</b>	192.168.1.196		10.1.1.103	10.1.1.102		
<b>Subnet Mask</b>	255.255.255.0		255.255.255.0	255.255.255.0		
<b>Default Gateway</b>	192.168.1.1					

Ethernet settings

Failover settings

Ethernet Interface Failover Settings		
Requirements for failover mode to be enabled:		
1. Failover is allowed only between the ethernet ports of the following pairs in the table below 2. Both interfaces in the failover pair should have static addressing, i.e., DHCP should be disabled 3. Interface pairs should belong to the same subnet		
<b>Note: Setting interface pairs in failover mode may impact performance!</b>		
Interface Pair	Status	Select
eth0-eth1	At least one IP Address is empty	<input type="checkbox"/>
eth2-eth3	Failover Enabled	<input checked="" type="checkbox"/>
eth4-eth5	At least one IP Address is empty	<input type="checkbox"/>

Figure 5–27: Example of One Failover Pair

### Example 2—Multiple Failover Pairs

In this example, a 1 Gb quad port expansion card is installed in the MediaDirector 2202/2201, all six interfaces are connected, and every failover pair is configured for failover. Note that every interface is configured with static IP addresses, and that each failover pair is assigned to the same IP subnet.

**Ethernet Interface Settings**

Parameters	Interface 1	Interface 2	Interface 3	Interface 4	Interface 5	Interface 6
<b>Interface Name</b>	eth0	eth1	eth2	eth3	eth4	eth5
<b>Cabling</b>	Connected	Connected	Connected	Connected	Connected	Connected
<b>MAC Address</b>	00:D0:28:0F:00:60	00:D0:28:0F:00:61	00:D0:28:0F:00:62	00:D0:28:0F:00:63	00:D0:28:0F:00:64	00:D0:28:0F:00:65
<b>MTU</b>	1500	1500	1500	1500	1500	1500
<b>DHCP</b>	<input type="checkbox"/>					
<b>IP Address</b>	10.1.1.104	10.1.1.109	10.2.1.107	10.2.1.121	10.3.1.112	10.3.1.113
<b>Subnet Mask</b>	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0
<b>Default Gateway</b>			10.2.1.1			

**Ethernet settings**  **Failover settings** 

**Ethernet Interface Failover Settings**

Requirements for failover mode to be enabled:

1. Failover is allowed only between the ethernet ports of the following pairs in the table below
2. Both interfaces in the failover pair should have static addressing, i.e., DHCP should be disabled
3. Interface pairs should belong to the same subnet

**Note:** Setting interface pairs in failover mode may impact performance!

Interface Pair	Status	Select
eth0-eth1	Failover Enabled	<input type="checkbox"/>
eth2-eth3	Failover Enabled	<input type="checkbox"/>
eth4-eth5	Failover Enabled	<input type="checkbox"/>

**Enable Failover Mode** **Disable Failover Mode**

Figure 5–28: Example of Three Failover Pairs

## Configuring Additional Routes



**CAUTION:** The procedure in this section is intended for qualified technical personnel, skilled at advanced networking procedures. If you are unsure of any steps, consult with your network administrator or contact Technical Support before proceeding.

In the unusual circumstance that you need to configure a network route in addition to the route specified for a given interface in the Ethernet Interface Settings section of the Network Settings page, you may use the Configure Additional Routes feature to add a route. [Figure 5–29](#) shows an example of an additional route.

Ethernet Interface Settings				
Parameters	Interface 1	Interface 2	Interface 3	Interface 4
<b>Interface Name</b>	eth0	eth1	ixeth0	ixeth1
<b>Cabling</b>	Connected	Disconnected	Connected	Connected
<b>MAC Address</b>	00:D0:28:0F:00:78	00:D0:28:0F:00:79	00:D0:28:0F:00:7E	00:D0:28:0F:00:7F
<b>MTU</b>	1500	1500	1500	1500
<b>DHCP</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>IP Address</b>	10.1.1.156		192.168.1.185	10.2.1.138
<b>Subnet Mask</b>	255.255.255.0		255.255.255.0	255.255.255.0
<b>Default Gateway</b>	10.1.1.1			

Ethernet settings → Additional route ↓

Configure Additional Routes				
Subnet Address	Subnet Mask	Gateway	Select Interface	Add Route
<input type="text"/>	<input type="text"/>	<input type="text"/>	eth0	<input type="button" value="Add"/>

**Existing Routes**

Subnet Address	Subnet Mask	Gateway	Interface	Delete Route
198.168.20.0	255.255.255.0	192.168.1.1	eth3	<input type="button" value="Delete"/>

Figure 5–29: Example of Additional Route

**To configure an additional route:**

- In the **Configure Additional Routes** section, select an interface from the **Select Interface** drop-down menu. Note that you may only select interfaces which are connected. Configure the following fields as necessary:
  - Subnet Address**
  - Subnet Mask**
  - Gateway**
- In the **Add Route** column, click **Add**.

Once the new route has been added, the details of that route appear in the **Existing Routes** section (see [Figure 5–29](#)).

Note that for each interface, you may add as many additional routes as you wish.

Once you have configured an additional route, a **Delete Route** column will appear in the **Existing Routes** section, as shown in [Figure 5–29](#). To delete an existing route, click the **Delete** button for the route you wish to delete.

## Changing the Primary IP Address



**CAUTION:** The procedure in this section is intended for qualified technical personnel, skilled at advanced networking procedures. If you are unsure of any steps, consult with your network administrator or contact Technical Support before proceeding.

The primary IP address is the first Spectrum video server IP address that is discovered by the SystemManager, and is used to communicate with SystemManager. If you wish to change this IP address, follow the procedure below.



**IMPORTANT:** Changing the primary IP address for the Spectrum video server will cause SystemManager to lose connection with it. Note that the primary IP address is displayed next to the name of the Spectrum video server host on the **System Diagram** page.

**To change the Primary IP address:**

1. Navigate to the **Network Settings** page, and then scroll to the **Ethernet Interfaces** section of the page.
2. Identify the Ethernet Interface used for the primary IP address.
3. For the Ethernet Interface, which uses the primary IP address, make sure **DHCP** is deselected, enter the new values in the **IP Address**, **Subnet Mask**, and **Default Gateway** fields, and then click **Done**. This will cause SystemManager to lose connection with the Spectrum video server.
4. Remove the Spectrum video server from SystemManager using the Remove Devices feature. Refer to the instructions in [Removing Devices](#) to select the Spectrum video server that contains the primary IP address you wish to change, and remove it.
5. Use the Connect Harmonic Device feature to connect to the new primary IP address. Refer to the instructions in [Connecting a Device from a Different IP Network](#) and use the new primary IP address in the field for **Enter device IP address or device name**.
6. Once you have connected to the new primary IP address, view the System Diagram on the **Configuration** tab to verify that you are connected to the Spectrum video server.

## Changing a Spectrum Video Server Description

The Spectrum video server description is useful in clarifying a particular Spectrum video server's (or host's) role in your Spectrum System.

**To change a Spectrum video server description:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click a dual host or individual host's Spectrum video server icon to display the **Physical Configuration** page for the selected Spectrum video server or host.
3. Click the Spectrum video server's picture to display the **Properties** page.
4. Scroll down to the **MediaDirector Description** field.
5. Click **Change Desc** to display the **Change MediaDirector Description** page.
6. Type the new description in the text box.
7. Click **Save** to save the description and return to the **Properties** page. The new description appears in the **MediaDirector/MediaCenter/MediaDeck Description** field.

## Changing MediaDirector Clock Reference VITC Lines (for MediaDirectors 2100, 2101, 2102 and 2102B)

On the **MediaDirector Properties** page, the two "Clock Reference" drop-down boxes select the TV lines from which the MediaDirector reads VITC (Vertical Interval Time Code) on the incoming analog reference signal. For proper operation with selected third party automation applications (or when dubbing between MediaDirectors), the two selections (which default to lines **14** and **16**) must match the VITC lines of the reference black connected to the MediaDirector.

**To change the MediaDirector's clock reference VITC lines:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click a **MediaDirector** icon to display the **MediaDirector Physical Configuration** page for the selected MediaDirector.
3. Click the MediaDirector's picture to display the **MediaDirector Properties** page.
4. Scroll down to the **Clock Ref. VITC Lines** field.
5. Using the two drop-down boxes, choose the two lines on which VITC is carried in the clock reference signal (your house reference) to the MediaDirector's **REF LOOP** connector.
6. After selecting, wait for a moment while the system checks the reference lines for the presence of VITC.
  - If the label "**VITC Detected**" appears, your choices are correct.
  - If the label "**VITC Not Detected**" appears, the MediaDirector cannot find VITC on the two selected lines. In this situation, check your VITC generator and verify the line selection, and check the reference connection to the MediaDirector itself.

## Changing MediaDirector Reference Field Rate (for MediaDirectors 2100, 2101, 2102 and 2102B)

On the **MediaDirector Properties** page, the **Reference Field Rate** function sets the rate at which the MediaDirector runs its internal reference clock.

**To change the MediaDirector's reference field rate:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click a **MediaDirector** icon to display the **MediaDirector Physical Configuration** page for the selected MediaDirector.
3. Click the MediaDirector's picture to display the **MediaDirector Properties** page.
4. Scroll down to the **Reference Field Rate** line.
5. Select the desired field rate, either **Auto Select** or **Manual**.
  - Choose **Auto Select** (the default selection) to have the MediaDirector run off the clock signal that is connected to its **REF LOOP** connector. The system chooses 525 or 625 depending upon the analog input signal. The selected rate is displayed beside the box – either 59.99Hz for 525 or 50Hz for 625. If no incoming reference signal is connected, the MediaDirector defaults to 50Hz.
  - Choose **Manual Select** to select the desired rate yourself. A second drop-down box appears, allowing you to choose between 24Hz, 50Hz, 59.99Hz or 60Hz.

## Specifying Character Sets to Use with Certain Protocols and QuickTime

Although Unicode is supported on a Spectrum System with a MediaDirector 2100, 2101, 2102, or 2102B, certain protocols and QuickTime, which are supported by a Harmonic system, do not directly support Unicode.

For FTP, BVW, VDCP protocols or the QuickTime file wrapper format, in the situations specified in *Table 5-1*, you must specify which character set to use.

**Table 5–1: Specific Protocol and QuickTime Character Set**

<b>When using this protocol/wrapper...</b>	<b>You need to specify the character set because/if...</b>
FTP	the FTP (archive system, windows) application being used does not support UTF8 filenames.
BVW/VDCP	the automation system using one of these protocols may not be able to specify or read strings in the UTF8 format.
QuickTime	The QuickTime .mov file contains strings specifying the location of media files. Currently QuickTime does not support the Unicode format. This means that the format of the string is dependent on the language and OS that the clip was generated on. The MediaDirector must be told in advance what format is being used in the mov file.
	<p>Instances when the Character Set must be specified include:</p> <ul style="list-style-type: none"> <li>■ Clips created or modified by applications such as NLE's will store a particular character set in the mov file. The MediaDirector needs to know the format of the string in order to find the associated media files.</li> <li>■ Clips accessed directly over the network or copied off of the MediaDirector may be imported into third party applications. The MediaDirector needs to know in advance what format to use so third party application will be able to read the strings in the mov file.</li> <li>■ Clips with foreign names created with previous versions of the MediaDirector will use the format used by the application driving the server. The MediaDirector needs to know how to read the strings in order to find the media files.</li> </ul>

1. With a legacy File System updated, launch the SystemManager application.
2. From the **Home** tab, click the **Character Set** icon to open the **Character Set** page. Check the box(es) in the **Select** column to identify the MediaDirector(s) to which you want to apply a new character set.
3. Using the previous table as a reference, check the appropriate protocol(s) and/or wrapper format check box(es) as shown in *Figure 5–30*.

The screenshot shows a software interface for managing character sets. At the top, a blue header bar contains the text '{\*} Character set'. Below this is a section titled 'MediaDirectors' containing a table with four rows of data. The columns are labeled 'Name', 'FTP', 'BVW & VDCP', 'Quicktime', and 'Select'. The rows list 'AI\_D4-01043', 'AI\_D4-01043H1', 'AI\_D7-C01H0', and 'AI\_D7-C01H1', all with 'UTF8' selected for all protocols. Below this is a 'Change to' button and two buttons: 'Select all MediaDirectors' and 'Clear Selection'. Underneath is a large table titled 'Standard' with a dropdown menu set to 'IANA'. This table lists various character encoding standards with their aliases. Some entries have detailed descriptions in the 'Aliases' column.

Name	FTP	BVW & VDCP	Quicktime	Select
<a href="#">AI_D4-01043</a>	UTF8	UTF8	UTF8	<input type="checkbox"/>
<a href="#">AI_D4-01043H1</a>	UTF8	UTF8	UTF8	<input type="checkbox"/>
<a href="#">AI_D7-C01H0</a>	UTF8	UTF8	UTF8	<input type="checkbox"/>
<a href="#">AI_D7-C01H1</a>	UTF8	UTF8	UTF8	<input type="checkbox"/>

Change to  Select all MediaDirectors  Clear Selection

Standard	IANA
Name	Aliases
<input type="radio"/> UTF-8	
<input type="radio"/> UTF-16	ISO-10646-UCS-2
<input type="radio"/> UTF-16BE	
<input type="radio"/> UTF-16LE	
<input type="radio"/> UTF-32	ISO-10646-UCS-4
<input type="radio"/> UTF-32BE	
<input type="radio"/> UTF-32LE	
<input type="radio"/> UTF-7	
<input type="radio"/> SCSU	
<input type="radio"/> BOCU-1	csBOCU-1
<input type="radio"/> CESU-8	
<input type="radio"/> ISO_8859-1:1987	ISO-8859-1 IBM819 cp819 latin1 csISOLatin1 iso-ir-100 11
<input type="radio"/> ANSI_X3.4-1968	US-ASCII ASCII ANSI_X3.4-1986 ISO_646.irv:1991 ISO646-US us csASCII iso-ir-6 cp367
<input type="radio"/> ISO-2022-JP	
<input type="radio"/> JIS_Encoding	
<input type="radio"/> ISO-2022-JP-2	
<input type="radio"/> ISO-2022-KR	
<input type="radio"/> ISO-2022-CN	

**Figure 5–30: Specifying the Character Set**

- From the **Standard** drop down list, select the general standard to use.

A subset of standards within the selected standard appears as shown in part in the previous figure.

- Select the standard subset to apply.

The **Change to** button in the MediaDirectors section reflects the subset chosen.

- Click **Change to <new character set>** to apply the character set to the selected MediaDirector(s).

## Viewing Character Sets Associated with Spectrum Video Servers

To view the character sets associated with a Spectrum video server:

- Click the **Home** tab to display the **Home** page.
- Click the **Character Set** icon in the left-hand column to display the **Set Character Sets** page.

This page displays the currently selected character sets associated with a Spectrum video server and according to protocol and file format.

## Editing Track Tags

On the Spectrum video server **Properties** page, the **Edit Track Tags** function allows you to edit the contents of a **Track Tag File** for MediaDirectors in an EFS or MediaCenters.

A Track Tag File contains the language labels used in your facility for track tagging. By using a consistent set of labels throughout your facility, a Spectrum video server can read the labels and automatically route the audio to the appropriate channels. The TrackTool application (which allows you to add and rearrange tracks in a clip as well as tag them with language labels), refers to the Track Tag File to ensure that the tracks attached to media clips are the same ones used in the configuration of Spectrum video server players.

Refer to the *TrackTool User's Guide* or the TrackTool help system for more detailed information about the TrackTool application.

By default, the Track Tag File (**TrackKeyValueDefs.txt**) is located on the Spectrum video server's file system at: **fs\config\TrackKeyValueDefs.txt**. where **fs** is the actual File System name.

#### To edit a Track Tag File:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click a Spectrum video server icon to display the **Physical Configuration** page for the selected Spectrum video server.
3. Click the Spectrum video server's picture to display the **Properties** page.
4. Scroll down and click **Edit Track Tags**.

The **Edit Player Track Tags** page appears.

5. Edit the contents of the **Track Tag File** as necessary, keeping the following in mind:

Each file can include these items on separate lines:

- Optional comment line(s), which start with a hash character # followed by any comment text. For example:  
# This is a comment and will be ignored.
- A mandatory keycode line indicating the key being configured. This item must be included once in the file, just before the track tag code mentioned below. The line starts with the letter K followed by a colon, followed by the key code. For track tags, the key code is "ovn\_trackmatch". For example:

K:ovn\_trackmatch

- Optional track code line(s). The line starts with the letter A followed by a colon, followed by the language code, which may be any US-ASCII character sequence. For example:

A:French

In addition:

- Tag names must not exceed twenty characters in length and must not include a comma, slash, or ampersand (&). A tag name with an ampersand will be saved but will not be selectable.
- Adding silence1 through silence8 inserts 1-8 channels of silence on the next channel(s). Choose the number of "silence" tags required by your facility, up to a maximum of eight.
- Adding tracknum0 through tracknum7 causes play of the audio track whose position in the clip's track stack matches the number specified in the tag. Choose the required number of "tracknum" tags, up to a maximum of eight. Note that since the numbering scheme for tracknum tags starts with zero, tracknum0 would match the first audio track in the clip's track stack.
- The strings "NONE" and "None" are reserved. Do not use in this file.
- "silence" and "tracknum" tags should not be assigned to tracks in TrackTool.
- Track tagging rules are applied to non-tagged clips if the rules contain any "tracknum" tags.

An example of a complete file is as follows:

```
# Omneon clip and player track-tagging file.  
#  
# Comment lines start with #  
# The first non-comment line should always be 'K:ovn_trackmatch'  
# Remaining lines start with A: followed by the name of the  
language tag.  
# Tag names must not exceed 20 characters, and must not contain  
comma or slash.  
# 'silence<n>' inserts <n> channels of silence.  
# 'tracknum<n>' selects numbered track to be played on the next  
channel(s).  
K:ovn_trackmatch  
A:English  
A:Spanish  
A:French  
A:Chinese  
A:silence1  
A:silence2  
A:silence3  
A:silence4  
A:silence5  
A:silence6  
A:silence7  
A:silence8  
A:tracknum0  
A:tracknum1  
A:tracknum2  
A:tracknum3  
A:tracknum4  
A:tracknum5  
A:tracknum6  
A:tracknum7
```

6. Click **Save File** to save the file to the MediaDirector's or MediaCenter's File System.

The edited file is now available for reference when, or if, you wish to configure Players using the SystemManager application, or, if you wish to configure clips using the TrackTool application.



**NOTE:** Once you create a Player and start to configure an audio track, verify that all tags created in the Track Tag File are acceptable by clicking on the down arrow in the language tag section and checking that all tags are available for selection. If a tag is unavailable, review the rules in step 5 to identify any syntax errors with the tag.

---

Refer to the *Omneon TrackTool User's Guide* or the TrackTool help system for information on how to configure clips using TrackTool.

## Configuring Track Tag Rules for an Audio Track

This procedure allows you to apply language tag rules for the playout of audio files associated with the audio tracks of a particular Player.



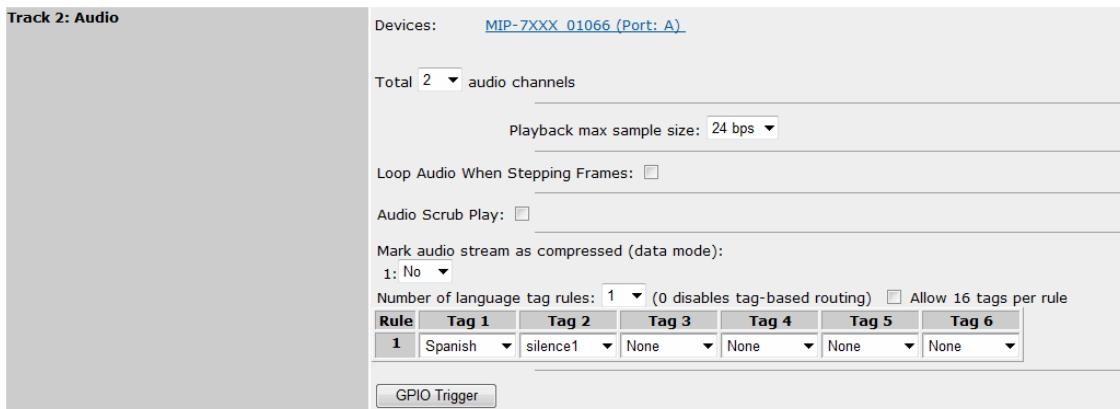
**NOTE:** The Number of Language Tag Rules field only appears if you have enabled **Player Track Tagging** from the SystemManager **Options** page.

Once you have edited a Track Tag File (according to the instructions in [Editing Track Tags](#)) and added an audio track to a player, you can use the language tag section of the Edit Player page to create rules, which associate the player's audio track with language tags on the clip to be played. The rules specify which language tag on the clip the Spectrum system looks for, and in what order. When Spectrum matches the language tag specified in the rule with a tag on the clip, it assigns all audio channels on the clip to the next available channel of the audio track for that player. Once all channels on the audio track are assigned, Spectrum stops looking for rules.

#### To configure track tag rules:

1. Create a Player by following the first 9 steps outlined in [Creating a Player](#).
2. Click **Audio** to add an audio track to the Player.
3. From the language tag rules drop down box, select the number of rules you wish to institute. Select from **0** to a maximum of **16** rules to be applied to audio file playout. Note the following:
  - Track Tags are only available if you have already edited and saved the Track Tag File. Refer to [Editing Track Tags](#) for detailed information on how to edit this file. If you have not edited the Track Tag File, Language Tag selections do not appear and audio tracks in a clip will play back in the order they were recorded (or as rearranged by TrackTool).
  - If you select zero (0) rules, then track tagging is disabled for this Player; and audio tracks in the clip will play out in the order in which they were recorded, or "stacked" by the TrackTool application.
  - Depending on the number of language tag rules selected, SystemManager displays a corresponding number of rows from which you can select up to six language tags. The selections in the language tag drop-down menus determine the order that SystemManager will search for audio tracks to play back, starting with **Tag 1** and ending with **Tag 6**. If the audio track in **Tag 1** is not found, then SystemManager attempts to play the audio track in **Tag 2** and so forth.
4. If you would like to configure more than 6 tags per rule, select the **Allow 16 tags per rule** checkbox to increase the number of tags per rule.
5. For each rule, make your track selections. Note the following:
  - If tags are not specified for a particular rule, the SystemManager sets these tags to **None**.
  - The numbering scheme for tracknum tags starts with zero. To select the first audio track in the clip's track stack, set the tag to **tracknum0**.

[Figure 5-31](#) illustrates a configuration of two audio channels, with one language tag rule to be applied to channel output.

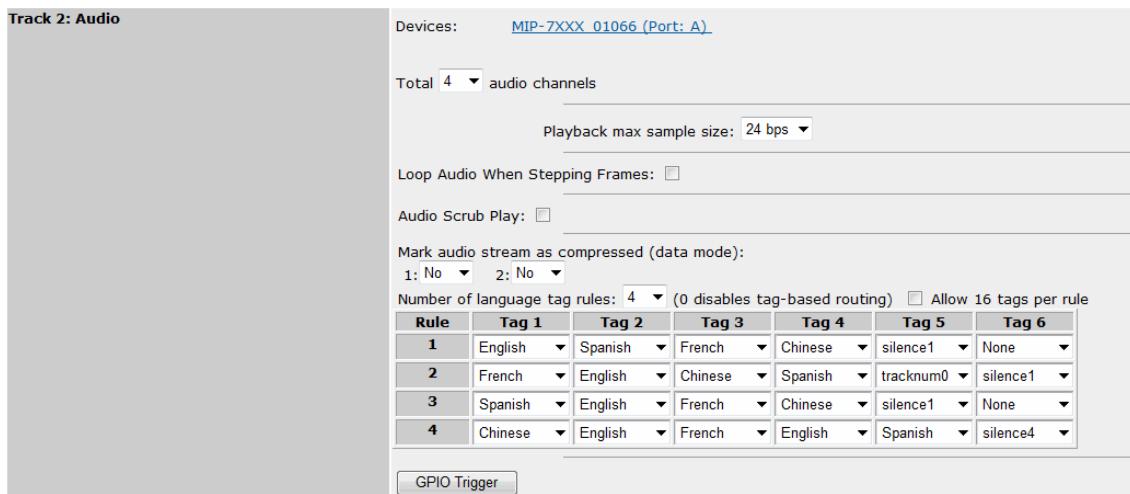


**Figure 5–31: Sample Track Tag Configuration with One Rule**

The configuration in [Figure 5–31](#) dictates playout as follows:

- **Rule 1** stipulates that if an Spanish track is present in a clip, Spanish is played out. If no Spanish track is found, one channel of silence is the output.

[Figure 5–32](#) illustrates a configuration of four audio channels, with four language tag rules to be applied to channel output.



**Figure 5–32: Sample Track Tag Configuration with Four Rules**

The configuration in [Figure 5–32](#) dictates playout as follows:

- **Rule 1** stipulates that if an English track is present in a clip, English is played out. If no English track is found, a Spanish track is played out if present. If no Spanish track is found, a Chinese track is played out if present. If no Chinese track is found, one channel of silence is the output.
- **Rule 2** stipulates that if a French track is present in a clip, French is played out. If no French track is found, an English track is played out if present. If no English track is found, then a Spanish track is played back. If no Spanish track is found, then the first audio track in the clip's track stack would be played back. If no track is found, silence is the output.

- **Rule 3** stipulates that if a Spanish track is present in a clip, Spanish is played out. If no Spanish track is found, English is played out if present. If no English track is found, French is played out. If no French track is found, Chinese is played out. If no Chinese track is found, one channel of silence is the output.
- **Rule 4** stipulates that if a Chinese track is present in a clip, Chinese is played out. If no Chinese track is found, English is played out if present. If no English track is found, French is played out. If no French track is found, English is played out. If no English track is found, Spanish is played out if present. If no Spanish track is present, one channel of silence is the output.

Note the following general guidelines about Track Tagging:

- If you want to specify the language tag for the audio to play out of a particular port, select silence as the last tag in each row. See [Figure 5-31](#) as an example.
- When applying tags, Harmonic recommends that all tracks have the same number of channels per file.
- If either Track Tagging is turned off on the Player, or there are no tags associated with a clip, the clip is loaded as if Track Tagging is disabled.
- Audio track tagging and rearranging is limited to audio tracks and *cannot* be applied to individual audio channels. A clip can contain one or more audio tracks; each of these tracks may contain one or more audio channels.

## Copying the Track Tag File to Spectrum Video Servers Outside an EFS

This procedure allows you to use the same **Track Tag File** with Spectrum video servers outside an Extended File System.

### To copy the Track Tag File:

1. In your Windows Explorer User Interface, navigate to the **Track Tag File** on MediaDirector A. By default, the **Track Tag File** (`TrackKeyValueDefs.txt`) is located on the Spectrum MediaDirector's file system at: `fs\config\TrackKeyValueDefs.txt`. where `fs` is the actual File System name.
2. Right-click > **Copy** file.
3. Open a window for the MediaDirector B and paste the file in an appropriate folder.

The **Track Tag File** is now available for track tagging from MediaDirector B.

## Changing the Spectrum Video Server Time Zone

This procedure allows you to select the international time zone in which your facility is located. This ensures that the "date" stamp on recorded clips is correct, and provides assistance for Technical Support for remote troubleshooting.

### To change the Time Zone:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click a Spectrum video server icon to display the **Physical Configuration** page for the selected Spectrum video server.
3. Click the Spectrum video server's picture to display the **Properties** page.
4. Scroll down to the **Time Zone** line.

5. Using the drop-down box, select the time zone in which the Spectrum video server is located.

## Configuring the MediaDirector Fibre Channel Loop Speed

This procedure allows you to change the speed at which the MediaDirector 2100, 2101, 2102, or 2102B communicates with an 4000 Series MediaStore over Fibre Channel.

However, this procedure does not modify the speed at which the 4000 Series MediaStore operates. That speed must be adjusted on the MediaStore itself. Ensure that you have set the desired loop speed on the MediaStore. Refer to “Configuring the MediaStore Fibre Channel Loop Speed” in the *Spectrum Getting Started Guide*.

Both the MediaDirector and MediaStore must operate at the same Fibre Channel Loop speed in order to communicate properly. For information on available speeds for each MediaDirector, refer to “Configuring the Fibre Channel Loop Speed between MediaDirector and MediaStore” in the *Spectrum Hardware Orientation Guide*.

### To configure the MediaDirector Fibre Channel Loop Speed:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click a **MediaDirector** icon to display the **MediaDirector Physical Configuration** page for the selected MediaDirector.
3. Click the MediaDirector’s picture to display the **MediaDirector Properties** page.
4. Scroll down to the **Set FC Loop Speed** button at the bottom of the page.
5. Click the button (it may display **1 Gbps** or **2 Gbps** or **4 Gbps** depending on the MediaDirector) to set the desired speed. Once clicked, ensure that all “Speed” fields reflect the new speed.
6. Reboot the MediaDirector for the change to take place

## Changing the Spectrum Video Server Wink State

### To change the wink state:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click a Spectrum video server icon to display the **Physical Configuration** page for the selected Spectrum video server.
3. Click the Spectrum video server’s picture to display the **Properties** page.
4. Scroll to the bottom of the page, and check the **Wink State** line.
5. Change the Spectrum video server’s wink state as desired:
  - If On, click **Wink Off** to stop winking the blue light bar on the front panel.
  - If Off, click **Wink On** to start winking the blue light bar on the front panel.

## Rebooting the Spectrum Video Server

On the **Properties** page, the “reboot” function is a local function that is not associated with the firmware upgrade process. Reboot the Spectrum video server when it is experiencing problems, or if you do not want to reboot the Spectrum video server immediately after a firmware upgrade.

### To reboot the Spectrum video server:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click a Spectrum video server icon to display the **Physical Configuration** page for the selected Spectrum video server.

3. Click the Spectrum video server's picture to display the **Properties** page.
4. Scroll to the bottom of the **General Properties** section of the page and click **Reboot**.
5. When the **Confirmation** dialog appears, click **OK**. The Spectrum video server's status changes to "Rebooting," then "Not Connected," then "Configuring," and finally to "Connected." The complete process takes approximately two minutes though it may take longer for SystemManager to display the status once the unit is up and running.



**NOTE:** You can also reboot one or more Spectrum video servers on the Upgrade Firmware page. Refer to "Upgrading MediaDirector and MediaCenter Firmware" in the *Spectrum System Installation and Hardware Reference Guide* for details.

## Powering Down the MediaDirector 2100/2101 and 2102/2102B

Before powering down the MediaDirector, make sure to stop the MediaDirector file system. If this procedure is not performed, a small amount of disk space will be lost each time the MediaDirector is powered down improperly.



**NOTE:** In certain circumstances, powering down one MediaDirector in an EFS configuration may cause video disruption to channels on other MediaDirectors.

### To power down the MediaDirector:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click a **MediaDirector** icon to display the **MediaDirector Physical Configuration** page for the selected MediaDirector.
3. Click the MediaDirector's picture to display the **MediaDirector Properties** page.
4. Scroll to the bottom of the General Properties section of the page and click **Shutdown Filesystem**.
5. Verify that the status shown in the File System field changes to **Stopped**.
6. Remove the MediaDirector's AC cord(s) from their power sources.

For instructions on powering down your entire Spectrum system or for power up instructions, refer to the *Spectrum System Installation and Hardware Reference Guide*.

## Powering Down the MediaDirector 2252/2251 and 2202/2201, MediaCenter, or MediaDeck 7000



**NOTE:** In certain circumstances, powering down one MediaDirector in an EFS configuration may cause video disruption to channels on other MediaDirectors.

### To power down the MediaDirector 2252/2251 and 2202/2201, MediaCenter, or MediaDeck 7000:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click a Spectrum video server icon to display the **Physical Configuration** page for the selected video server.
3. Click the Spectrum video server's picture to display the **Properties** page.
4. Scroll to the bottom of the **General Properties** section and click **Shutdown Director/MediaCenter/MediaDeck**.
5. When the **Confirmation** dialog appears, click **OK**.

## 6. Verify that Spectrum video server's status changes to "Not Responding."

For instructions on powering down your entire Spectrum system or for power up instructions, refer to the *Spectrum System Installation and Hardware Reference Guide*.

## Viewing a Snapshot of the Spectrum Video Server Log

This procedure displays a snapshot of the Spectrum video server's log. The function is used for diagnostic purposes only.

### To view a snapshot of the Spectrum video server log:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click a Spectrum video server icon to display the **Physical Configuration** page for the selected Spectrum video server.
3. Click the Spectrum video server's picture to display the **Properties** page.
4. Scroll to the bottom of the page and click **Log Snapshot** to display the **View Device Log** page. Contact Technical Support for additional assistance.

## Upgrading Spectrum Video Server Firmware

Perform the "Upgrade Firmware" procedure either from the Spectrum video server Properties page or from the **Upgrade Firmware** page.

Refer to "Upgrading MediaDirector and MediaCenter Firmware" in the *Spectrum System Installation and Hardware Reference Guide* for details. For the MediaDeck 7000, refer to "Upgrading Spectrum MediaDeck 7000 Firmware" in the *Spectrum MediaDeck 7000 User Guide*.

## Replacing a Spectrum Video Server

For complete replacement instructions for the MediaDirector 2252/2251 and 2202/2201, MediaCenter, Spectrum MediaDeck 7000, and Omneon MediaDeck, refer to the *Spectrum System Component Replacement Guide*.

## Replacing a MediaDirector 2100, 2101, 2102 or 2102B

The SystemManager uses IP addresses to uniquely identify MediaDirectors. If a MediaDirector is replaced (for example, because of unit failure), allow the new MediaDirector to assume different IP addresses from the replaced unit, if possible. This allows the SystemManager to simultaneously display both units, and allows you to move Players from the old unit to the new one, using the **Move Player** function.

### To install a replacement MediaDirector:

1. Before you install the new MediaDirector, copy the contents of the filetypes.conf file for the MediaDirector you wish to replace and save them to a separate text file. For information on accessing the filetypes.conf file, refer to [Editing the Filetypes.conf File](#).
2. Rack mount the new MediaDirector and then connect the Ethernet cables to the Network Switch used for the Spectrum system.
3. Power up the MediaDirector by plugging in both power cables.



**IMPORTANT:** Do not connect any MediaPorts or Fibre cables at this point.

4. If you are using a DHCP server, the DHCP server will assign new IP addresses. From the **Configuration** tab of SystemManager, view the **System Diagram** page. Verify that the new MediaDirector appears, and is shown as **Connected**. The new MediaDirector will appear with the new IP addresses. Continue to [Step 5](#).

If you are using DHCP and wish to use the same IP addresses on the new MediaDirector, continue to [Step 5](#). The IP addresses can be changed at a later point in the replacement procedure.

To assign a **static IP** address, do the following:

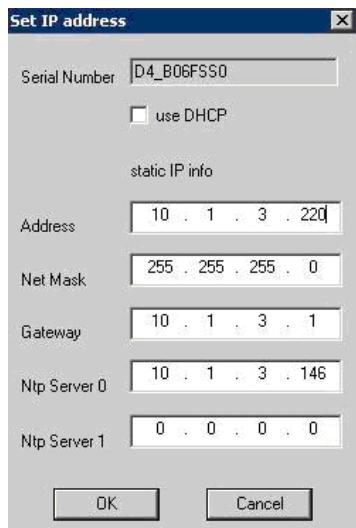
- a. From the SystemManager platform, start the Monitor.exe program.
- b. From the Monitor application, select the **View** drop-down menu and select **Serial Number List**.
- c. From the Serial Number List, you will see a list of all current MediaDirectors on the network, which are identified by their Serial Number. (See [Figure 5–33](#))

Serial Number	IP Address	Name	Last Update
D4_B03H1	10.1.3.43	RICKD4H1	00:00:02
D4_B03H2	10.1.3.31	RICKD4H2	00:00:03
D4_B03H3	10.1.3.184	RICKD4H3	00:00:00
D4_B04FSSO	10.1.3.147		00:00:00
D4_B04H0	10.1.3.151	RJW_D4B04	00:00:04
D4_B06FSSO			11:32:43

**Figure 5–33: Opening the Serial Number List**

Notice in [Figure 5–33](#) that the bottom MediaDirector (D4\_B06FSSO) does not have an IP Address assigned to it. This is what you will see when a new MediaDirector is first connected.

- d. To assign an IP address to the MediaDirector host, click and highlight the Serial Number, and then right-click and select **Set IP Address**. The **Set IP address** configuration box appears. (See [Figure 5–34](#))



**Figure 5–34:** Setting the IP address

- e. Type in the IP Address needed. In *Figure 5–34*, the IP Address, Net Mask and Gateway have been set. If an NTP server is used for the correct time of day, enter the IP address of the NTP server. If no NTP server is available, the SystemManager platform can be used for this. Once this information is entered, click **OK**.



**NOTE:** If the new MediaDirector must use the same IP Addresses as the original one, assign the new MediaDirector temporary IP Addresses so that it can be pre-configured. These settings can be changed at a later time.

- f. Once you have set the IP addresses, power down the new MediaDirector by removing both power cables, wait for at least 15 seconds, and then power it back up by plugging the power cables back in.
- g. Once the MediaDirector is powered back up, open the Monitor application again. From the **View** menu, select **Serial Number List**. You should now see that the new MediaDirector is reporting the IP Address that was assigned to it. (See *Figure 5–35*).

Omneon Director List			
Serial Number	IP Address	Name	Last Update
D4_B03H1	10.1.3.43	RICKD4H1	00:00:09
D4_B03H2	10.1.3.31	RICKD4H2	00:00:00
D4_B03H3	10.1.3.184	RICKD4H3	00:00:07
D4_B04FSS0	10.1.3.147		00:00:05
D4_B04H0	10.1.3.151	RJW_D4B04	00:00:01
D4_B06FSS0	10.1.3.220		12:03:19

**Figure 5–35:** Viewing the IP Address

- 5. Once the MediaDirector is powered up with correct IP addresses, log on to SystemManager. Refer to [Logging on to the SystemManager Application](#) for details. On the System diagram page in SystemManager, the new MediaDirector should appear as **Connected**.

6. Since the new MediaDirector has just been connected, there will probably be Error Alarms in the system. To clear the alarms from the SystemManager, click on the word **ALARM** that is flashing in the top right corner of the web browser. This will take you to the Alarms page.
7. To acknowledge and delete the alarms, click the **Delete All** button. This will delete them from the SystemManager interface. However, the alarms will still be saved in a log file on the system.
8. Now that the new MediaDirector is connected and the alarms are cleared, make sure that all MediaDirectors, MediaPorts and MediaStores in your Spectrum system are running the same version of firmware. If necessary, follow the instructions in "Upgrading MediaDirector and MediaCenter Firmware" in the *Spectrum System Installation and Hardware Reference Guide* to upgrade your MediaDirector firmware. The Installation and Hardware Reference Guide also includes instructions for upgrading other components of your Spectrum system as well. After the upgrade, the new MediaDirector will require a reboot. Once you have verified that all the Spectrum MediaDirectors, MediaPorts, and MediaStores in your system are running the same version of firmware, continue to the next step.



**IMPORTANT:** Do not deactivate any players on the original MediaDirector at this point.

9. Remove the original MediaDirector by doing the following:
  - a. Power down both the original and the new MediaDirectors, by removing both power cables on each unit.
  - b. Remove each Fibre cable from the original MediaDirector and re-connect to the new MediaDirector, using the exact same connection slots.



**NOTE:** Do not re-connect the Fibre cables into different slots on the new MediaDirector. This will cause the system to be unstable and could cause the File System to become unusable. (A diagram provided by Harmonic should show the proper connections).

- c. Remove each 1394 cable from the original MediaDirector and re-connect to the new MediaDirector, using the exact same connection slot.
- d. Once all cables are connected to the new MediaDirector, plug in the power cables. Leave the original MediaDirector powered off. Once the new MediaDirector has powered on, if everything is connected correctly, all six LED lights on the front panel of the MediaDirector should be a solid light blue color. (Refer to "Rules for System LEDs" in the *Spectrum System Getting Started Guide*). If there are multiple MediaDirectors connected to the file system, the bottom right LED will be a Dark Blue, indicating a shared file system.
10. Once you have powered up the new MediaDirector, check the status of the file system by doing the following:
  - a. From the **Configuration** tab in SystemManager, click the **Disk Utilities** icon in the left-hand column. The **Disk Utilities** page displays all MediaDirectors on the network and the status of their file systems.
  - b. Click on the name of the new MediaDirector. This will take you to the **Disk Utilities** page for the new MediaDirector. There are two columns displayed, the Physical View and Logical View. At the top of the Logical View column, there is a link to the file system, as shown in [Figure 5-36](#).

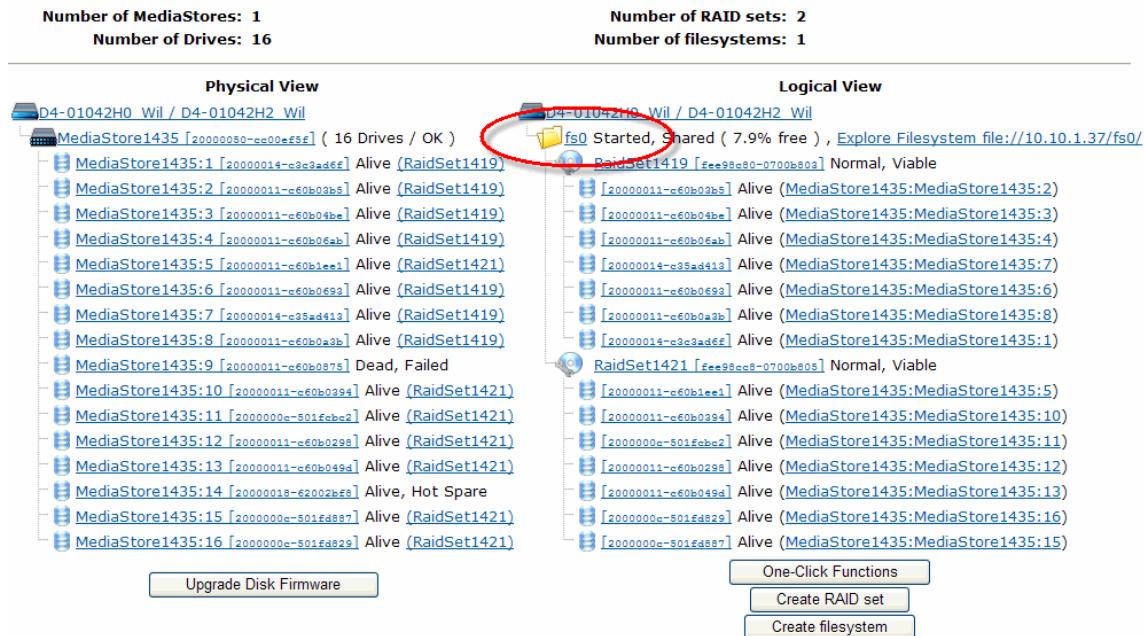


Figure 5–36: Opening the File System Utilities

- Click on the link to the file system name listed (**fs0**) to open **File System Utilities** page (See [Figure 5–37](#)).

The screenshot shows the 'Filesystem utilities' page for a specific file system. At the top, there's a header bar with a folder icon and the title 'Filesystem utilities for fs0 on D4-01042H0\_W1 / D4-01042H2\_W1'. Below this is a table titled 'Information:' containing various file system parameters:

Name	fs0	(Stop the filesystem to change the name)
Status	Started	
Fibre Channel Loop Allocation Status	Optimal	
Last Message		
Total Space	880.89 GB	
Free Space	69.25 GB ( 7.9% )	
Non-Volatile Journaling	On	
Mode	Read/Write	
Sharing with other MediaDirectors	On	
Mountpoint	/fs0	
Filesystem drives wink state	Off <input type="button" value="Wink on"/>	
Character Set Db loaded	Yes	
GUID	fee98c7f-0700b802	

Below the information table, there's a section for '2 RAID sets' with two entries:

RaidSet1410	Normal, Protected, Viable	(Stop FS to detach)
<a href="#">RaidSet1421</a>	Normal, Protected, Viable	(Stop FS to detach)

At the bottom of the page, a message states: 'There are 0 unattached RAID sets on D4-01042H0\_W1 / D4-01042H2\_W1.' There are also 'Stop FS' and 'Done' buttons.

**Figure 5-37: Checking the File System**

- d. Depending on the version of software, the Status field may appear as Started or Not Started. Even if the file system is Started, you must stop the file system and then start it again to ensure that the correct settings take effect.
  - ❑ If the Status field shows **Started**, click the **Stop FS** button to stop the file system. Once the file system is stopped, click the **Start FS** button to start the file system.
  - ❑ If the Status field shows **Not started**, click the **Start FS** button to start the file system.



**CAUTION:** Do not click "Initialize FS." This will wipe out the entire file system.

- e. When the **Start Filesystem** page appears, make sure that the first option, **Use NVRAM Journaling for this filesystem**, is checked, and that all other options are unchecked. Click the **Start** button.

On the **Filesystem utilities** page, the **Mode** field should now indicate **Read/Write**, the **Sharing with other MediaDirectors** field should indicate **On** (if it does not, the MediaDirector needs to be rebooted), and the **Mountpoint** field should indicate **/fs0**.

On the front panel of the MediaDirector, the bottom right light should now be a Dark Blue color to indicate that the EFS is working.

- f. From the **Configuration** tab, click the **Disk Utilities** icon and verify that the new MediaDirector is shown as **Started** and **Shared**.



**NOTE:** It is recommended that all MediaDirectors sharing a File System (EFS) be rebooted after one MediaDirector has been replaced. This ensures that all the MediaDirectors are in sync.

11. Once you have checked the file system status, you must move your players from the original MediaDirector to the new MediaDirector. To move your players, do the following:
  - a. From the **Configuration** tab in SystemManager, click the **Player Configuration** icon on the left-hand column.
  - b. From the MediaDirector list provided, select the new MediaDirector, which should show 0 players configured. The **Player List** page appears.
  - c. From the **Player List** page, under **Move Players from another MediaDirector**, use the dropdown box to select the host of the original MediaDirector, which has the players you wish to move, and click **Select Players**. A list of those players appears (see *Figure 5–38*).

Total number of active players: 0.  
Total number of inactive players: 4.

		<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Activate</a>	<input type="checkbox"/>	
	<b>FI-1290</b>	Unconnected	<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Activate</a>	<input type="checkbox"/>
	<b>MGR-1996</b>	Inactive	<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Activate</a>	<input type="checkbox"/>
	<b>MGR-1998</b>	Inactive	<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Activate</a>	<input type="checkbox"/>
	<b>MGR-1998-2</b>	Inactive	<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Activate</a>	<input type="checkbox"/>

[Activate Selected](#) [Deactivate Selected](#) [Select all Players](#) [Clear Selection](#)

[Delete Selected](#)

**Figure 5–38: Move Players**

- d. Select the players that you wish to move by clicking the appropriate check boxes. You can also click Select all Players or Clear Selection as desired. Once the players are selected, click **Deactivate Selected**. This will deactivate the players.
- e. Re-select the players you wish to move and then click the **Move** button to perform the move function between MediaDirectors. The selected players will disappear from the list.
- f. Click **Done**. The players are now located on the new MediaDirector.
- g. Open the **Player List** page for the new MediaDirector and activate the players by selecting the associated check boxes and clicking **Activate Selected**.
- h. Verify the players are usable by recording or playing material using those players.



**NOTE:** You must perform steps d-h above for each host respectively.

12. Now that you have moved the players to the new MediaDirector, remove the virtual MediaDirector from SystemManager by doing the following:
  - a. In SystemManager, click the **Diagnostic** tab, and then from the left-hand column, click the **Remove Device** icon. The **Remove Devices** page appears.
  - b. In the section for **Not Responding**, the original MediaDirector hosts will be shown. Using the drop-down menu, select each host for that MediaDirector, and then click **Remove** until the MediaDirector hosts no longer appears.

Once you have removed the original MediaDirector, you can change the IP address and name of the new MediaDirector.

13. Change the IP settings of the new MediaDirector to use those of the previous MediaDirector.



**IMPORTANT:** Make sure you have followed all the previous replacement steps before performing the following steps.

- a. From the **Configuration** tab, click the icon for the new MediaDirector, and then click it again on the following page to display the **MediaDirector Properties** page.
- b. From the **MediaDirector Properties** page, under **Change Settings**, click the **IP Settings** button. The **IP Settings** page appears.
- c. From the **IP Settings** page, change each MediaDirector host to reflect the new addresses and then click **Done**. Once you have changed the IP settings, reboot the MediaDirector using the **Reboot** button on the MediaDirector Properties page.
- d. Once the MediaDirector has rebooted, verify that the changes to the IP settings are correct.
- e. If you had modified the contents of the filetypes.conf file for the original MediaDirector, configure the new MediaDirector to match. For information on editing the filetypes.conf file, refer to [Editing the Filetypes.conf File](#). Refer to your record of the settings for the original MediaDirector.

# Chapter 6

## Spectrum Video Server File System Configuration

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This chapter provides configuration instructions for the File Systems in the following topics:

- [\*Building a File System for a Single MediaDirector 2250 Series\*](#)
- [\*Building a File System for a Single MediaDirector 2100 or 2200 Series\*](#)
- [\*Building an EFS System for Multiple MediaDirector 2250 Series\*](#)
- [\*Building an EFS System for Multiple MediaDirector 2100 and 2200 Series\*](#)
- [\*Verifying MediaDirectors in EFS have Common Views of Disks, RAID Sets, and File System\*](#)
- [\*About Disk Subsystem Performance Factors\*](#)
- [\*About the MediaDeck 7000 File System Configuration\*](#)
- [\*About the MediaCenter File System Configuration\*](#)
- [\*Creating a RAID Set\*](#)
- [\*Deleting a RAID Set\*](#)
- [\*Adding Drives to a RAID Set\*](#)
- [\*Removing Drives from a RAID Set\*](#)
- [\*Creating a MediaDirector File System\*](#)
- [\*Initializing a File System\*](#)
- [\*Deleting a File System\*](#)
- [\*Renaming a File System\*](#)
- [\*Adding a RAID set to a File System\*](#)
- [\*Removing a RAID Set from a File System\*](#)
- [\*Changing File System Wink State\*](#)
- [\*Viewing a File System Unicode Status\*](#)
- [\*Modifying the RAID Set Channel\*](#)
- [\*About Making a Hot Spare\*](#)
- [\*About Clearing a Hot Spare\*](#)
- [\*Changing RAID Set Wink State\*](#)



**IMPORTANT:** The procedures outlined in this chapter are written for qualified technical personnel, skilled at advanced networking procedures. If you have any questions, please consult with your facility's Information Service staff or contact Technical Support.

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### Building a File System for a Single MediaDirector 2250 Series

This section provides instructions for building a File System for a single MediaDirector, using a MediaDirector 2250. A variety of system configurations are supported; please consult with your Harmonic Representative for assistance in designing your particular system. [\*Table 6-1\*](#) illustrates the MediaStore models valid for most system configurations.

**Table 6–1: MediaDirector 2252 and 2251 File System Configuration**

Part #	# Drives	RAID Set	Capacity per Drive	Storage Capacity
MediaStore MSS-5000 Series a				
MSS-5016-03H	16	2 x (6+2)	300 GB	3.49 TB
MSS-5024-03H	24	3 x (6+2)	300 GB	5.23 TB
MediaStore MSS-5000 Series b				
MSS-5016-06H	16	2 x (6+2)	600 GB	6.98 TB
MSS-5024-06H	24	3 x (6+2)	600 GB	10.46 TB
MediaStore MSS-5000 Series c				
MSS-5016-09H	16	2 x (6+2)	900 GB	10.47 TB
MSS-5024-09H	24	3 x (6+2)	900 GB	15.71 TB

**To build a File System:**

1. Ensure that your serial attached SCSI (SAS) connections are properly connected. Connect up to four MediaStore 5000 series per MediaDirector 2250 series.

Refer to “Connecting MediaDirectors and MediaStores SAS and EFS Ethernet” in the *Spectrum System Installation and Hardware Reference Guide* for detailed connection instructions.

2. Ensure that the MediaStore’s configuration is correct. Refer to [Table 6–1](#) for details.
3. Harmonic recommends that you set the Unit ID number on each MediaStore with a unique number, starting with 1. For instructions on setting Unit ID number, refer to “Setting the Unit ID Number” in the *Spectrum System Installation and Hardware Reference Guide*.
4. Check the MediaStore’s drive status on the **Disk Utilities** page:
  - Click the **Configuration** tab to display the Configuration page.
  - In the left-hand column, click the **Disk Utilities** icon to display the Disk Utilities page. A list of available MediaDirectors will be shown.
  - Click the icon for the MediaDirector that you want to check. Its Disk Utilities page appears. Verify that the correct number of drives appears, and that each drive’s status is “alive.”
  - Click each drive’s **Disk** icon, and on the Drive Properties page, verify the disk size (in GB) is as expected.
5. All drives are shipped already formatted from the Harmonic factory. If a drive is not “alive” or if an incorrect capacity (in GB) or block size appears, contact Technical Support. Before continuing with the next step, all drives should be alive, formatted and not RAIDed.
6. Use the “One-Click” functions to create and initialize the File System.

Refer to [About One-Click Functions](#) for instructions.

At this point, the File System is ready for use.



**IMPORTANT:** This system can expand to EFS (Extended File Sharing) with two MediaDirectors. If you wish to use two MediaDirectors, you should start with 24 drives in the first MediaStore. Continue to [Building an EFS System for Multiple MediaDirector 2250 Series](#).

## Building a File System for a Single MediaDirector 2100 or 2200 Series

This section provides instructions for building a File System for a single MediaDirector, using a MediaDirector 2100, 2101, 2102, 2102B, 2202, and 2201. A variety of system configurations are supported; please consult with your Harmonic Representative for assistance in designing your particular system. [Table 6–2](#), [Table 6–3](#), [Table 6–4](#), and [Table 6–5](#) illustrate the MediaStore models valid for most system configurations.

**Table 6–2: MediaDirector 2100 File System Configuration**

Part #	# Drives	RAID Set	Hot Spare	Capacity per Drive	Storage Capacity
MediaStore MSC-4000 Series a					
MSC-4171a	8	6+1+1	1	73 GB	438 GB
MSC-4272a	16	2 x (6+1+1)	2 (1 per RAID set)	73 GB	876 GB
MediaStore MSC-4000 Series b					
MSC-4171b	8	6+1	1	146 GB	854 GB
MSC-4272b	16	2 x (6+1+1)	2 (1 per RAID set)	146 GB	1,752 GB
MediaStore MSC-4000 Series c					
MSC-4171c	8	6+1	1	300 GB	1,800 GB
MSC-4272c	16	2 x (6+1+1)	2 (1 per RAID set)	300 GB	3,600 GB
MediaStore MSS-4000 Series d					
MSS-4171d	8	6+1+1	1	450 GB	3,600 GB
MSS-4272d	16	2 x (6+1+1)	2 (1 per RAID set)	450 GB	7,200 GB
MediaStore MSS-4000 Series e					
MSS-4171e	8	6+1+1	1	600 GB	4,800 GB
MSS-4272e	16	2 x (6+1+1)	2 (1 per RAID set)	600 GB	9,600 GB

**Table 6–3: MediaDirector 2101 File System Configuration**

Part #	# Drives	RAID Set	Hot Spare	Capacity per Drive	Storage Capacity
MediaStore MS-4000 Series a					
MS-4140a	4	3+1	0	73 GB	219 GB
MS-4171a	8	6+1+1	1	73 GB	438 GB
MS-4272a	16	2 x (6+1+1)	2 (1 per RAID set)	73 GB	876 GB
MediaStore MS-4000 Series b					

Part #	# Drives	RAID Set	Hot Spare	Capacity per Drive	Storage Capacity
MS-4140b	4	3+1	0	146 GB	438 GB
MS-4171b	8	6+1+1	1	146 GB	876 GB
MS-4272b	16	2 x (6+1+1)	2 (1 per RAID set)	146 GB	1,752 GB
MediaStore MS-4000 Series c					
MS-4140c	4	3+1	0	300 GB	891 GB
MS-4171c	8	6+1+1	1	300 GB	1,800 GB
MS-4272c	16	2 x (6+1+1)	2 (1 per RAID set)	300 GB	3,600 GB
MediaStore MSS-4000 Series d					
MSS-4171d	8	6+1+1	1	450 GB	3,600 GB
MSS-4272d	16	2 x (6+1+1)	2 (1 per RAID set)	450 GB	7,200 GB
MediaStore MSS-4000 Series e					
MSS-4171e	8	6+1+1	1	600 GB	4,800 GB
MSS-4272e	16	2 x (6+1+1)	2 (1 per RAID set)	600 GB	9,600 GB

Table 6–4: MediaDirectors 2102 and 2102B File System Configuration

Part #	# Drives	RAID Set	Hot Spare	Capacity per Drive	Storage Capacity
MediaStore MSS-4000 Series a					
MSS-4171a	8	6+1+1	1	73 GB	438 GB
MSS-4272a	16	2 x (6+1+1)	2 (1 per RAID set)	73 GB	876 GB
MediaStore MSS-4000 Series b					
MSS-4171b	8	6+1+1	1	146 GB	876 GB
MSS-4272b	16	2 x (6+1+1)	2 (1 per RAID set)	146 GB	1,752 GB
MediaStore MSS-4000 Series c					
MSS-4171c	8	6+1+1	1	300 GB	1,800 GB
MSS-4272c	16	2 x (6+1+1)	2 (1 per RAID set)	300 GB	3,600 GB
MediaStore MSS-4000 Series d					
MSS-4171d	8	6+1+1	1	450 GB	3,600 GB
MSS-4272d	16	2 x (6+1+1)	2 (1 per RAID set)	450 GB	7,200 GB

MediaStore MSS-4000 Series e					
MSS-4171e	8	6+1+1	1	600 GB	4,800 GB
MSS-4272e	16	2 x (6+1+1)	2 (1 per RAID set)	600 GB	9,600 GB



**NOTE:** Systems with MediaDirectors 2102 or 2102B support MS or MSS-4000 Series MediaStores only.

**Table 6–5: MediaDirector 2202 and 2201 File System Configuration**

Part #	# Drives	RAID Set	Hot Spare	Capacity per Drive	Storage Capacity
MediaStore MSS-4000 Series a					
MSS-4171a	8	6+1+1	1	73 GB	438 GB
MSS-4272a	16	2 x (6+1+1)	2 (1 per RAID set)	73 GB	876 GB
MediaStore MSS-4000 Series b					
MSS-4171b	8	6+1+1	1	146 GB	876 GB
MSS-4272b	16	2 x (6+1+1)	2 (1 per RAID set)	146 GB	1,752 GB
MediaStore MSS-4000 Series c					
MSS-4171c	8	6+1+1	1	300 GB	1,800 GB
MSS-4272c	16	2 x (6+1+1)	2 (1 per RAID set)	300 GB	3,600 GB
MediaStore MSS-4000 Series d					
MSS-4171d	8	6+1+1	1	450 GB	3,600 GB
MSS-4272d	16	2 x (6+1+1)	2 (1 per RAID set)	450 GB	7,200 GB
MediaStore MSS-4000 Series e					
MSS-4171e	8	6+1+1	1	600 GB	4,800 GB
MSS-4272e	16	2 x (6+1+1)	2 (1 per RAID set)	600 GB	9,600 GB

#### To build a File System:

1. Ensure that your Fibre Channel connections are properly wired. Connect as many MediaStores as necessary. Consult your Harmonic Representative for assistance as required. Refer to “Connecting a MediaStore and a MediaDirector Using Fibre Channel” in the *Spectrum System Installation and Hardware Reference Guide* for fibre channel connection information.
2. Ensure that the MediaStore’s configuration is correct. Refer to the previous tables for details.
3. Ensure that the MediaStore and MediaDirector’s Fibre Channel Loop Speed is set the same for all devices. Refer to “Connecting Fiber Channel Cables” in the *Spectrum System Hardware Orientation Guide*.
4. Refer to “Configuring MediaDirector Fibre Channel Loop Speed” in the *Spectrum System Hardware Orientation Guide*.

5. Check the MediaStore's drive status on the **Disk Utilities** page:
  - Click the **Configuration** tab to display the Configuration page.
  - In the left-hand column, click the **Disk Utilities** icon to display the Disk Utilities page. A list of available MediaDirectors will be shown.
  - Click the icon for the MediaDirector that you want to check. Its Disk Utilities page appears. Verify that the correct number of drives appears, and that each drive's status is "alive."
  - Click each drive's **Disk** icon, and on the Drive Properties page, verify the disk size (in GB) is as expected.
6. All drives are shipped already formatted from the Harmonic factory. If a drive is not "alive" or if an incorrect capacity (in GB) or block size appears, contact Technical Support. Before continuing with the next step, all drives should be alive, formatted and not RAIDed.
7. Use the "One-Click" functions to create and initialize the File System.

Refer to [About One-Click Functions](#) for instructions.

At this point, the File System is ready for use.

**IMPORTANT:** This system can expand to EFS (Extended File Sharing) with two or more MediaDirectors. If you wish to use more than one MediaDirector, you should start with 16 drives in the first MediaStore.  
[Building an EFS System for Multiple MediaDirector 2100 and 2200 Series](#)

## Building an EFS System for Multiple MediaDirector 2250 Series



**NOTE:** The EFS (Extended File Sharing) feature requires the Extended File Sharing License. Contact your Harmonic Sales Representative for more information.



**IMPORTANT:** Changing from a single Spectrum System to a multiple Spectrum Systems requires shutting down the single system, re-wiring the system to accommodate the new MediaDirector(s), and then starting the File System on each new MediaDirector. Files that already resided on the single system are protected. Contact Technical Support for additional assistance.

This section provides instructions for building an EFS shared across multiple MediaDirectors, using the MediaDirector 2250 series. A number of system configurations are supported; please consult with your Harmonic representative for assistance in designing your particular system. [Table 6-6](#) displays the MediaStore models valid for most system configurations.



**NOTE:** For each system, the attached MediaStores must all use the same capacity drives. However, you may connect MediaStores which have different numbers of RAID sets (for example, one with a 2 x (6+2) configuration and one with a 3 x (6+2) configuration).



**NOTE:** You may only connect a MediaDirector 2252 to another MediaDirector 2252 in an EFS. Likewise, you may only connect a MediaDirector 2251 to another MediaDirector 2251.

**Table 6-6: MediaDirector 2252 and 2251 File System Configuration**

Part #	# Drives	RAID Set	Capacity per Drive	Storage Capacity
MediaStore MSS-5000 Series a				
MSS-5016-03H	16	2 x (6+2)	300 GB	3.49 TB

MSS-5024-03H	24	3 x (6+2)	300 GB	5.23 TB
MediaStore MSS-5000 Series b				
MSS-5016-06H	16	2 x (6+2)	600 GB	6.98 TB
MSS-5024-06H	24	3 x (6+2)	600 GB	10.46 TB
MediaStore MSS-5000 Series c				
MSS-5016-09H	16	2 x (6+2)	900 GB	10.47 TB
MSS-5024-09H	24	3 x (6+2)	900 GB	15.71 TB

**To build an EFS system:**

1. Ensure that your serial attached SCSI (SAS) connections are properly connected. Connect up to 4 MediaStore 5000 series. Refer to “Connecting MediaDirectors and MediaStores Using SAS” in the *Spectrum System Installation and Hardware Reference Guide*.
2. Ensure that the MediaDirector EFS Ethernet connections are properly connected. Refer to “Connecting Two MediaDirectors in an EFS Configuration” in the *Spectrum System Installation and Hardware Reference Guide*.
3. Harmonic recommends that you set the Unit ID number on each MediaStore in your system with a unique number, starting with 1. For instructions on setting Unit ID number, refer to “Setting the Unit ID Number” in the *Spectrum System Installation and Hardware Reference Guide*.
4. Ensure that all MediaDirectors are running the same version of firmware before creating the EFS system.

Refer to “Upgrading MediaDirector Firmware” in the *Spectrum System Installation and Hardware Reference Guide* for details.

5. Create a File System on MediaDirector 1. Refer to [Creating a MediaDirector File System](#) for instructions. Be sure to follow all steps. At the conclusion of the process, your **Disk Utilities** page will only show one MediaDirector and one File System.
6. Once the File System is working on MediaDirector 1, start the File System on MediaDirector 2. Note that this step is only required the *first time* an EFS system is brought up. On subsequent start-ups, the File System starts automatically. Refer to [Starting the File System](#) for instructions.
7. For MediaDirector 2, go to the **Disk Utilities** page and verify that the same File System and RAID sets as MediaDirector 1 appear on MediaDirector 2’s **Disk Utilities** page.

At this point, the File System will be running on both MediaDirectors.

## Building an EFS System for Multiple MediaDirector 2100 and 2200 Series



**NOTE:** The EFS (Extended File Sharing) feature requires the Extended File Sharing License. Contact your Harmonic Sales Representative for more information.



**IMPORTANT:** Changing from a single Spectrum System to a multiple Spectrum System requires shutting down the single system, re-wiring the system to accommodate the new MediaDirector(s), and then starting the File System on each new MediaDirector. Files that already resided on the single system are protected. Contact Technical Support for additional assistance.

This section provides instructions for building an EFS shared across multiple MediaDirectors, using MediaDirectors 2100, 2101, 2102, 2102B, 2202, and 2201. A large number of system configurations are supported; please consult with Harmonic Representative for assistance in designing your particular system. [Table 6-7](#), [Table 6-8](#) and [Table 6-9](#) display the MediaStore models valid for most system configurations...

**Table 6-7: MediaDirector 2100 EFS System Configurations**

Part #	# Drives	RAID Set	Hot Spare	Capacity per Drive	Storage Capacity
MediaStore MSC-4000 Series a					
MSC-4171a	8	6+1+1	1	73 GB	438 GB
MSC-4272a	16	2 x (6+1+1)	2 (1 per RAID set)	73 GB	876 GB
MediaStore MSC-4000 Series b					
MSC-4171b	8	6+1	1	146 GB	854 GB
MSC-4272b	16	2 x (6+1+1)	2 (1 per RAID set)	146 GB	1,752 GB
MediaStore MSC-4000 Series c					
MSC-4171c	8	6+1	1	300 GB	1,800 GB
MSC-4272c	16	2 x (6+1+1)	2 (1 per RAID set)	300 GB	3,600 GB
MediaStore MSS-4000 Series d					
MSS-4171d	8	6+1+1	1	450 GB	3,600 GB
MSS-4272d	16	2 x (6+1+1)	2 (1 per RAID set)	450 GB	7,200 GB
MediaStore MSS-4000 Series e					
MSS-4171e	8	6+1+1	1	600 GB	4,800 GB
MSS-4272e	16	2 x (6+1+1)	2 (1 per RAID set)	600 GB	9,600 GB

**Table 6-8: MediaDirector 2101 EFS System Configurations**

Part #	# Drives	RAID Set	Hot Spare	Capacity per Drive	Storage Capacity
MediaStore MS-4000 Series a					
MS-4140a	4	3+1	0	73 GB	219 GB
MS-4171a	8	6+1+1	1	73 GB	438 GB
MS-4272a	16	2 x (6+1+1)	2 (1 per RAID set)	73 GB	876 GB
MediaStore MS-4000 Series b					
MS-4140b	4	3+1	0	146 GB	438 GB
MS-4171b	8	6+1+1	1	146 GB	876 GB

Part #	# Drives	RAID Set	Hot Spare	Capacity per Drive	Storage Capacity
MS-4272b	16	2 x (6+1+1)	2 (1 per RAID set)	146 GB	1,752 GB
MediaStore MS-4000 Series c					
MS-4140c	4	3+1	0	300 GB	891 GB
MS-4171c	8	6+1+1	1	300 GB	1,800 GB
MS-4272c	16	2 x (6+1+1)	2 (1 per RAID set)	300 GB	3,600 GB
MediaStore MSS-4000 Series d					
MSS-4171d	8	6+1+1	1	450 GB	3,600 GB
MSS-4272d	16	2 x (6+1+1)	2 (1 per RAID set)	450 GB	7,200 GB
MediaStore MSS-4000 Series e					
MSS-4171e	8	6+1+1	1	600 GB	4,800 GB
MSS-4272e	16	2 x (6+1+1)	2 (1 per RAID set)	600 GB	9,600 GB

Table 6–9: MediaDirector 2102 and 2102B EFS System Configurations

Part #	# Drives	RAID Set	Hot Spare	Capacity per Drive	Storage Capacity
MediaStore MSS-4000 Series a					
MSS-4171a	8	6+1+1	1	73 GB	438 GB
MSS-4272a	16	2 x (6+1+1)	2 (1 per RAID set)	73 GB	876 GB
MediaStore MSS-4000 Series b					
MSS-4171b	8	6+1+1	1	146 GB	876 GB
MSS-4272b	16	2 x (6+1+1)	2 (1 per RAID set)	146 GB	1,752 GB
MediaStore MSS-4000 Series c					
MSS-4171c	8	6+1+1	1	300 GB	1,800 GB
MSS-4272c	16	2 x (6+1+1)	2 (1 per RAID set)	300 GB	3,600 GB
MediaStore MSS-4000 Series d					
MSS-4171d	8	6+1+1	1	450 GB	3,600 GB
MSS-4272d	16	2 x (6+1+1)	2 (1 per RAID set)	450 GB	7,200 GB
MediaStore MSS-4000 Series e					

MSS-4171e	8	6+1+1	1	600 GB	4,800 GB
MSS-4272e	16	2 x (6+1+1)	2 (1 per RAID set)	600 GB	9,600 GB

**Table 6–10: MediaDirector 2202 and 2201 EFS System Configurations**

Part #	# Drives	RAID Set	Hot Spare	Capacity per Drive	Storage Capacity
MediaStore MSS-4000 Series a					
MSS-4171a	8	6+1+1	1	73 GB	438 GB
MSS-4272a	16	2 x (6+1+1)	2 (1 per RAID set)	73 GB	876 GB
MediaStore MSS-4000 Series b					
MSS-4171b	8	6+1+1	1	146 GB	876 GB
MSS-4272b	16	2 x (6+1+1)	2 (1 per RAID set)	146 GB	1,752 GB
MediaStore MSS-4000 Series c					
MSS-4171c	8	6+1+1	1	300 GB	1,800 GB
MSS-4272c	16	2 x (6+1+1)	2 (1 per RAID set)	300 GB	3,600 GB
MediaStore MSS-4000 Series d					
MSS-4171d	8	6+1+1	1	450 GB	3,600 GB
MSS-4272d	16	2 x (6+1+1)	2 (1 per RAID set)	450 GB	7,200 GB
MediaStore MSS-4000 Series e					
MSS-4171e	8	6+1+1	1	600 GB	4,800 GB
MSS-4272e	16	2 x (6+1+1)	2 (1 per RAID set)	600 GB	9,600 GB

**To build an EFS system:**

1. Ensure that your Fibre Channel connections are properly wired. Connect as many MediaStores as necessary. Consult your Harmonic Representative for assistance as required.

Refer to “Connecting a MediaStore and a MediaDirector Using Fibre Channel” in the *Spectrum System Installation and Hardware Reference Guide* for fibre channel connection information.



**NOTE:** Only the connectors marked in purple are used in a Spectrum EFS.

2. Ensure that all MediaDirectors are running the same version of firmware before creating the EFS system. Refer to “Upgrading MediaDirector Firmware” in the *Spectrum System Getting Started Guide* for details.
3. Ensure that the MediaStore and MediaDirector’s Fibre Channel Loop Speed is set the same for all devices. Refer to “Connecting Fiber Channel Cables” in the *Spectrum System Hardware Orientation Guide*.
4. Refer to “Configuring the MediaDirector Fibre Channel Loop Speed” in the *Spectrum System Hardware Orientation Guide* for MediaDirector instructions.

5. Create a File System on MediaDirector 1. Refer to [Creating a MediaDirector File System](#) for instructions. Be sure to follow all steps. At the conclusion of the process, your **Disk Utilities** page will only show one MediaDirector and one File System.
6. Once the File System is working on MediaDirector 1, start the File System on MediaDirector 2. Note that this step is only required the *first time* an EFS system is brought up. On subsequent start-ups, the File System starts automatically.

Refer to [Starting the File System](#) for instructions.

7. For MediaDirector 2, go to the **Disk Utilities** page and verify that the same File System and RAID sets as MediaDirector 1 appear on MediaDirector 2's **Disk Utilities** page.
8. At this point, the File System will be running on both MediaDirectors. Verify that the lower right **Fibre Channel Status** LED on the front panel of each MediaDirector is now lit **Dark Blue**. This solid color LED indicates that disks are present, and the File System running in EFS mode.



**NOTE:** If the LED is not lit Dark Blue, a problem exists with the setup and configuration. Do not use the EFS system unless this LED is lit Dark Blue. Recheck all connections and steps outlined above.

## Verifying MediaDirectors in EFS have Common Views of Disks, RAID Sets, and File System



**IMPORTANT:** Prior to taking any action on a disk drive, RAID set, File System, MediaStore, or Fibre Channel 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. Under certain error conditions, taking action without this check may result in an aborted or damaged File System.

### To verify MediaDirector views:

1. Open a SystemManager application page for each MediaDirector in the EFS.
2. Navigate to the **Disk Utilities** page for the each MediaDirector.
3. Compare the data on the **Disk Utilities** pages.
  - If the system is not in a transient state, the view from all MediaDirectors should be identical with respect to all elements on the page. If they are, further actions or operations may proceed.
  - If the view between MediaDirectors is not consistent, and circumstances allow a reboot of all MediaDirectors, do this and go to step 1. If not, or if this reboot is performed but an inconsistent state persists, call Technical Support.

## About Disk Subsystem Performance Factors

The following discussion pertains to users who wish to create File Systems manually. If you are using the “**One-Click File System**” function, the system will automatically make decisions (as described below) for you.

When configuring disk storage for a MediaDirector or multiple MediaDirectors, two factors are paramount in determining the potential bandwidth of the disk subsystem:

- The number of Fibre Channel loops
- The number of virtual RAID channels

Increasing the Fibre Channel loop count has an obvious impact. Each loop represents a fixed-bandwidth (~80 MBps max. for 1 GHz, ~160 MBps max. for 2 GHz) data path between the disks and the MediaDirector(s); increasing the loop count implies reducing the disk/MediaDirector contention on each path.

The impact of adding virtual RAID channels is not as obvious, because their function is not as clear. When recording, data can be written in parallel to RAID sets that have different virtual channel settings, but data cannot be written to RAID sets that have the same virtual channel settings. In addition, the record process determines the limits of the playback process.

The net effect is that with more virtual channel settings, more disks can be driven to read and/or write data simultaneously, thereby improving the disk subsystem's potential bandwidth.

Suppose a system has two RAID sets. If both RAID sets are assigned to virtual channel A, data will be recorded to the first RAID set until it is full, and then to the second RAID set. On the other hand, if one RAID set is assigned to channel A and one to channel B, then "writes" are alternated between the two RAID sets as data is recorded, filling both more or less equally throughout the recording process. Since the disks in both RAID sets are active at any one time, this approach has significantly more potential disk bandwidth than the first approach.

Naturally, there is an interaction between the number of Fibre Channel loops and the number of virtual RAID channels. Generally, two RAID sets operating on the same Fibre Channel loop have sufficient bandwidth to saturate that loop. Thus, adding a third or fourth RAID set to that loop (and specifying different virtual channels for each RAID set) will not increase the bandwidth potential of the system.

To extend our previous example, suppose the system has four RAID sets, but all four are connected to a single Fibre Channel loop. Assigning each RAID set to a different virtual channel (A, B, C and D) will not improve the overall performance of the system versus assigning two RAID sets each to virtual channels A and B.

Two configuration guidelines will be helpful to maximize the disk subsystem bandwidth:

- Balance the RAID sets over as many Fibre Channel loops as possible.
- Ensure that the number of virtual channels is a multiple of the number of Fibre Channel loops used for disk access.

### Expanding Storage

Given the discussion above, is there any good reason not to maximize the number of virtual channels used in any configuration. Unfortunately, the answer is yes. When expanding storage, the minimum RAID set increment is the number of virtual channels in the system. Thus, if a system is configured with four RAID virtual channels, expanding storage must be accomplished in increments of four RAID sets. There is, therefore, good reason to keep the total number of virtual RAID channels to the minimum necessary to meet your performance needs. Your system performance should balance both the minimum number of Fibre Channel loops required and the minimum number of virtual channels required in order to meet a specific channel count.

Refer to [Modifying the RAID Set Channel](#) for instructions on setting virtual channels.

## About the MediaCenter File System Configuration

*Table 6-11* shows the available file system configurations for the MediaCenter.

**Table 6–11: MediaCenter File System Configuration**

# Drives	RAID Set	Capacity per Drive	Storage Capacity
12 SATA	2 x (4+2)	1 TB	8 TB
12 SATA	2 x (4+2)	2 TB	16 TB
12 SSD	2 x (5+1)	480 GB	4.8 TB
6 SSD	1 x (5+1)	480 GB	2.4 TB

Use the “One-Click” functions to create the file system and RAID set, and initialize the file system. Follow the instructions in [Using One-Click Functions](#).

## About the MediaDeck 7000 File System Configuration

*Table 6–12* shows the file system configuration for a single Spectrum MediaDeck 7000.

**Table 6–12: MediaDeck 7000 File System Configuration**

# Drives	RAID Set	Capacity per Drive	Storage Capacity
4 SATA	3+1	2 TB	6 TB
4 SSD	3+1	480 GB	1.406 TB (1440 GB)

Use the “One-Click” functions to create the file system and RAID set, and initialize the file system. Follow the instructions in [Using One-Click Functions](#).

## Creating a RAID Set



**NOTE:** This procedure is automatically performed as part of the “One-Click” File System feature. Refer to [Using One-Click Functions](#) for more information.

Use this procedure to create an empty RAID set, to which drives can then be attached. A RAID set can contain from four (minimum) to nine (maximum) drives.

### To create a RAID set:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available MediaDirectors appears.
3. Click the icon for the MediaDirector on which you want to create a RAID set. Its **Disk Utilities** page appears.
4. Click **Create RAID Set** to access the **Create RAID Set** page.
5. Type name of the RAID set in the **Name** field, and select a type:
  - Select **Un-protected** to create a RAID set with no parity drive.
  - Select **Protected** to create a RAID set with a parity drive that stores redundancy information. This is the default selection.
6. Click **Create RAID** to return to the **Disk Utilities** page. The new RAID set appears without any drives attached.



**NOTE:** This procedure is automatically performed as part of the "One-Click" File System feature. Refer to [Using One-Click Functions](#) for more information.

Use this procedure to delete a RAID set, typically, when the wrong drives have been attached. This procedure is preferable to *removing* drives from a RAID set.

**To delete a RAID set:**

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available MediaDirectors will be shown.
3. Click the icon for the MediaDirector on which you want to delete a RAID set. Its **Disk Utilities** page appears.
4. Verify that the RAID set is not attached to a File System. If it is, remove the RAID set from the File System. See [Removing a RAID Set from a File System](#) for details.

When the RAID set is not attached to a File System, the **Delete** button appears next to the **RAID Set** icon.

5. Click the **Delete** button to delete the RAID set. In the **Confirmation** dialog, click **OK**. The RAID set disappears from the **Disk Utilities** page. As required, create a new RAID set. Refer to [Creating a RAID Set](#) for instructions.

## Adding Drives to a RAID Set



**NOTE:** This procedure is automatically performed as part of the "One-Click" File System feature. Refer to [Using One-Click Functions](#) for more information.



**CAUTION:** Proceed with caution through this procedure as it is possible to add drives to a RAID set from a different MediaStore than the one intended.

Use this procedure to add drives to a RAID set. A RAID set can contain from four (minimum) to nine (maximum) drives.

**To add drives to a RAID set:**

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available MediaDirectors will be shown.
3. Click the icon for the MediaDirector on which the new RAID set resides — the one for which you want to add drives. The MediaDirector's **Disk Utilities** page appears.
4. Click the **RAID Set** icon to display the **RAID Set Utilities** page.
5. Scroll to the bottom of the page and click the **Add/Remove Drives** button to access the **Add/Remove Drives** page. The **Add/Remove Drives** page lists the status of the RAID set, and lists all available drives and hot spares connected to your MediaDirector.
6. In the "**Available Drives**" section, make a note of the drive slot numbers and MediaStore names. Note the **Check Box** adjacent to all available drives.
7. Check the drives that you wish to attach to the RAID set. Continue until all desired drives are checked, and then click the **Add Selected Drives** button. The selected drives are now removed from the "**Available Drives**" section and added to the "**Current Drives**" section.



**NOTE:** Keep in mind that when adding a drive to an existing RAID set, the drive with the smallest capacity in the RAID set dictates the capacity of the other drives within that RAID set.

If a Hot Spare is to be assigned to this RAID set, that step may be done now. Refer to [About Making a Hot Spare](#) for instructions.

8. The RAID set's Virtual Channel may also be changed at this time.

Refer to [Modifying the RAID Set Channel](#) for instructions.

9. Click **Done** to return to the **RAID Set Utilities** page. The drives that you selected will now be listed in the drive list.
10. If desired, verify that the correct drives have been assigned to the RAID set by clicking **Wink On**. Clicking **Wink Off** may then disable the wink function.
11. Click **Done** to return to the **Disk Utilities** page.

## Removing Drives from a RAID Set



**NOTE:** This procedure is automatically performed as part of the "One-Click" File System feature. Refer to [Using One-Click Functions](#) for more information



**CAUTION:** Removing a disk drive from a running MediaStore may generate fibre channel noise which will disrupt playback or recording of video for a few moments. In order to avoid disruption, disk drives should be bypassed before removing them from the MediaStore. Once a disk drive has been bypassed, it cannot be used again. Only bypassed disks that have failed can be returned to Harmonic.

This procedure is used to remove drives from a RAID set. However, when you perform the procedure, a "hole" is left in the RAID set that cannot be filled. If you have added the wrong drives to a RAID set, it is recommended that you delete the RAID set and start again.

### To remove a drive from a RAID set:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available MediaDirectors will be shown.
3. Click the icon for the MediaDirector on which the RAID set resides – the one from which you want to remove drives. The MediaDirector's **Disk Utilities** page appears.



**NOTE:** In an EFS environment, you must remove the "dead" drive from each of the MediaDirectors in the system.

4. Click the **RAID Set** icon to display the **RAID Set Utilities** page.
5. Scroll to the bottom of the page and click the **Add/Remove Drives** button to access the **Add/Remove Drives** page. The **Add/Remove Drives** page lists the status of the RAID set, and lists all available drives and hot spares connected to your MediaDirector.
6. Click the **Remove** button adjacent to the drive that you wish to remove from the RAID set. Continue until all desired drives are removed from the RAID set. Once removed, the drive jumps down to the **"Available Drives"** section.
7. When all desired drives are removed, click **Done** to return to the **RAID Set Utilities** page. In the table, the labels **"Unknown"** and **"Removed"** will appear for each removed drive.
8. Click **Done** to return to the **Disk Utilities** page.

## Creating a MediaDirector File System



**NOTE:** This procedure is automatically performed as part of the "One-Click" File System feature. Refer to [Using One-Click Functions](#) for more information.

Use this procedure to create an empty File System to which RAID sets can be attached. The procedure is performed when you are installing a new Spectrum System.

**To create a File System:**

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available MediaDirectors will be shown.
3. Click the icon for the MediaDirector on which you want to create a new File System. The MediaDirector's **Disk Utilities** page appears.
4. Click the **Create File System** button to display the **Create File System** page.
5. Enter a name for the new File System, with a maximum of eight characters.
6. Refer to [About Naming Files and System Elements](#) for proper naming conventions.
7. Click **Create File System**.

The system automatically returns to the **Disk Utilities** page. Verify that a new folder appears with name of the new File System adjacent to it.

## Initializing a File System



**NOTE:** This procedure is automatically performed as part of the "One-Click" File System feature for MediaDirectors. Refer to [Using One-Click Functions](#) for more information.

This procedure initializes and starts an existing File System. Use this procedure to complete the creation phase of the File System. Perform this procedure the very first time that you want to use the File System. Afterwards, the next time the File System needs to be started, use the "**Start FS**" procedure. It must not be initialized again. Refer to [Starting the File System](#) for instructions.



**IMPORTANT:** All content on all RAID sets that are attached to the File System will be erased.

**To initialize a File System:**

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available MediaDirectors appears.
3. Click the icon for the MediaDirector on which you want to initialize a File System. The MediaDirector's **Disk Utilities** page appears.
4. Verify that the File System has been created, and that at least one RAID set is attached to it.
5. Click the **File System Hyperlink** to display the **File System Utilities** page.
6. Reboot the system.
7. At the bottom of the page, click the **Initialize FS** button to display the **Initialize File System** page. This button only appears when the File System is stopped.
8. Select the desired File System options: **NVRAM Journaling**, **Read-only**, **Use Previous Start**, and **Save Options**.



**NOTE:** In most cases, you should not need to change the options away from the default selections.

9. Click **Initialize** to accept the selected options and initialize (and start) the File System. The system automatically returns to the **File System Utilities** page.
10. Verify that the File System's status has changed to "**Started**".
11. Click **Done** to return to the **Disk Utilities** page.



**NOTE:** If the File System does not start automatically, attempt to start the File System manually using the SystemManager. The File System must be started manually when a new MediaDirector is connected to a pre-existing File System.

## Deleting a File System



**NOTE:** This procedure is automatically performed as part of the "One-Click" File System feature. Refer to [Using One-Click Functions](#) for more information.

Use this procedure to delete a File System, for example, when it is no longer needed or when a File System has been created accidentally.

### To delete a File System:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available MediaDirectors will be shown.
3. Click the icon for the MediaDirector on which you want to delete an existing File System. The MediaDirector's **Disk Utilities** page appears.
4. Verify that there are no RAID sets attached to the File System. If there are, follow the procedures for removing a RAID set from a File System.

Refer to [Removing a RAID Set from a File System](#) for instructions.

5. With all RAID sets removed, click the **Delete** button adjacent to the **File System** hyperlink. When the confirmation dialog appears, click **OK** to accept.
6. Verify that the File System is no longer present on the **Disk Utilities** page.



**NOTE:** If a file system belonging to a Spectrum system is deleted and then recreated with a new name, both versions of the file system will appear as available in Windows\* Explorer. To resolve this issue, restart the MediaDirector after deleting the file system.

## Renaming a File System



### To change the File System name:

1. Stop the File System.

**NOTE:** In an Extended File System configuration, this must be done on each MediaDirector.

2. Click the **Change File System Name** button on the **File System Utilities** page.
3. Enter the new File System name.
4. Click the **Change** button.
5. Reboot all MediaDirectors or the MediaCenter connected to the File System.
6. Verify that the File System restarts on each Spectrum video server.

The new File System name should be reflected in the **Disk Utilities** page on the SystemManager, and under IP connection under CIFS.



**NOTE:** This procedure is automatically performed as part of the "One-Click" File System feature. Refer to [Using One-Click Functions](#) for more information.

Use this procedure to attach a RAID set to a File System. Perform the procedure when you are creating a new File System, or when you are adding new storage to an existing File System.

The RAID set that is to be added must have the correct number of disk drives, typically either 5 or 8. Verify this fact on the **RAID Set Utilities** page before proceeding.



**IMPORTANT:** Before attaching new RAID Sets to a pre-existing File System, make sure the File System has been stopped on all MediaDirectors. Failure to do this could cause the other MediaDirectors sharing the File System to automatically stop the File System.

#### To add a RAID set to a File System:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available MediaDirectors will be shown.
3. Click the icon for the MediaDirector on which you want to add a RAID set to an existing File System. The MediaDirector's **Disk Utilities** page appears.
4. Click on the **File System** hyperlink to display the **File System Utilities** page.
5. The RAID set that you want to attach will be listed in the "Unattached" section. Click the **Add** button adjacent to the RAID set. This action causes the RAID set to move up into the list of attached RAID sets.
6. Click **Done** to return to the **Disk Utilities** page.

## Removing a RAID Set from a File System



**NOTE:** This procedure is automatically performed as part of the "One-Click" File System feature. Refer to [Using One-Click Functions](#) for more information.

Use this procedure to remove a RAID set from a File System for purposes of deleting the RAID set, and/or the File System itself. This procedure is required if you have made a mistake with the RAID set, or if you are reconfiguring your disk drives.

#### To remove a RAID set from a File System:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available MediaDirectors will be shown.
3. Click the icon for the MediaDirector on which you want to remove a RAID set from a File System. The MediaDirector's **Disk Utilities** page appears.
4. Click the **File System** icon that contains the target RAID set, to display the **File System Utilities** page.
5. Ensure that the File System is stopped. If it is not, click **Stop FS**. When the confirmation dialog appears, click **OK** to accept. A **Detach** button appears if the File System is stopped.
6. Click **Detach**. When the confirmation dialog appears, click **OK** to accept. The File System now displays a "Removed" message in the previous RAID set's location.
7. Click **Done** to return to the **Disk Utilities** page.

## Changing File System Wink State

### To wink all drives in the File System:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available Spectrum video servers will be shown.
3. Click the icon for the Spectrum video server on which you want to wink the File System. The **Disk Utilities** page appears.
4. Click the **File System** hyperlink to display the **File System Utilities** page.
5. Check the **File System Drives Wink State** line.
6. Change the File System's wink state as desired:
  - If currently On, click Wink Off to stop winking all drives in the File System.
  - If currently Off, click Wink On to start winking all drives in the File System.



**NOTE:** Winking drives utilizes a small amount of Fibre Channel bandwidth. For optimum system operation, do not leave drives in the wink state when unnecessary.

## Viewing a File System Unicode Status

Use the following steps to view a File System's Unicode status by determining whether a file necessary for Unicode conversions is loaded on a File System.

### To view a File System Unicode status:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available Spectrum video servers will be shown.
3. Click the icon for the Spectrum video server on which you want to check the File System. The **Disk Utilities** page appears.
4. Click the **File System** hyperlink to display the **File System Utilities** page.
5. Check the **Character Set DB Loaded** line:
  - If the status is Yes, the file needed for Unicode conversion is available to the File System.
  - If the status is No, the file needed for Unicode is missing and no conversion can take place.
6. Click **Done** to return to the **Disk Utilities** page.

## Modifying the RAID Set Channel



**NOTE:** This procedure is automatically performed as part of the "One-Click" File System feature. Refer to [Using One-Click Functions](#) for more information.

Use this procedure to change the RAID set's virtual channel assignment, in order to optimize the system's bandwidth. Use this procedure in systems with more than one Fibre Channel loop. Refer to [About Disk Subsystem Performance Factors](#) for additional background information.



**IMPORTANT:** File System is next started or initialized. Changing the channel on a RAID set that already has media recorded onto it may cause the media to become inaccessible. Harmonic recommends that you initialize the File System (hence erasing all media) after changing any RAID set's channel.

**To modify the RAID set channel:**

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available MediaDirectors will be shown.
3. Click the icon for the MediaDirector on which you want to modify the RAID set channel. The MediaDirector's **Disk Utilities** page appears.
4. Click a **RAID Set** hyperlink to display the **RAID Set Utilities** page.
5. Scroll to the bottom and click **Set Channel** to display the **Modify Channel** page.
6. Select the desired virtual channel by clicking one of the **Channel Selection Buttons**, **A** through **H**. This action selects the channel and automatically returns to the **RAID Set Utilities** page.
7. At the top of the **RAID Set Utilities** page, verify that the **Channel** field displays the selected virtual channel.
8. Click **Done** to return to the **Disk Utilities** page.

## About Making a Hot Spare

If a drive failure occurs and a hot spare is available, the system will automatically utilize a hot spare to rebuild a protected RAID set with no interruption to video playback. Harmonic recommends that you always have at least one hot spare available for each RAID set.

A system can have multiple hot spares. There are two types of hot spares.

- A “**Global**” hot spare is a drive that will be used by the MediaDirector to fulfill hot spare requirements for any RAID set in any MediaStore in which the hot spare resides. A “**Global**” hot spare does *not* fulfill hot spare requirements in different enclosures. Refer to [Making a Global Hot Spare Drive](#) for more information.
- A “**Local**” hot spare is a drive that is associated with a particular RAID set. The MediaDirector will use this drive only to fulfill hot spare requirements for that particular RAID set. Refer to [Clearing a Global Hot Spare](#) for more information.



**NOTE:** If you enable Monitor Hotspares (from the Options page on the Home tab), the SystemManager will raise an alarm (and send notification by e-mail and/or trap if so configured) when a RAID set is no longer protected with an available hot spare.

## Making a Global Hot Spare Drive

**To configure a drive as a global hot spare:**

1. As a prerequisite to this procedure, ensure that you have purchased the **Hot Spare Option**. Contact your Harmonic sales representative for details.
2. Insert the hot spare drive into the MediaStore, into any open slot. There is no limit on the number of hot spares that can be created, however, you should not need more than one hot spare per RAID set.



**NOTE:** Not all MediaStore versions can support a hot spare. Check with Technical Support for details.

3. Verify the hot spare drive’s condition. On the **Disk Utilities** page, the drive should appear as “**Alive**” and “**Unraided**.” If the drive does not appear this way, contact Technical Support.
4. Verify the drive’s firmware. If the firmware revision level does not match the other drives, upgrade the drive’s firmware.

Refer to **Upgrading Disk Drive Firmware** in the *Spectrum System Getting Started Guide*. You can use this procedure to both check the firmware revision level and perform the upgrade if required.

5. Once the drive's firmware matches the other drives, on the **Disk Utilities** page, click the **Disk Drive** icon to display the **Drive Properties** page (for the selected drive).
6. At the bottom of the **Drive Properties** page, click **Make Hot Spare**. The button's label changes to **Clear Hot Spare**, the drive's status changes immediately to "Alive, Hot Spare," and the drive is ready for use as a global hot spare.

## Making a Local Hot Spare Drive



**NOTE:** This procedure is used when creating a File System manually. Note that the procedure is automatically performed as part of the "One-Click" File System feature. Refer to [Using One-Click Functions](#) for more information.

### To configure a drive as a local hot spare:

1. As a prerequisite to this procedure, ensure that you have purchased the **Hot Spare Option**. Contact your Harmonic sales representative for details.
2. Insert the hot spare drive into the MediaStore, into any open slot. There is no limit on the number of hot spares that can be created, however, you should not need more than one hot spare per RAID set.



**NOTE:** Not all MediaStore versions can support a hot spare. Check with Technical Support for details.

3. Verify the hot spare drive's condition. On the **Disk Utilities** page, the drive should appear as "Alive" and "Unraided." If the drive does not appear this way, contact Technical Support.
4. Verify the drive's firmware. If the firmware revision level does not match the other drives, upgrade the drive's firmware.

Refer to **Upgrading Disk Drive Firmware** in the *Spectrum System Getting Started Guide*. You can use this procedure to both check the firmware revision level and perform the upgrade if required.

5. Once the drive's firmware matches the other drives, on the **Disk Utilities** page, click the **RAID Set** icon to display the **RAID Utilities** page.
6. At the bottom of the **RAID Utilities** page, click **Add/Remove Drives** to display the **Add/Remove Drives** page.
7. Scroll down to the "Available Drives" section, where each drive will have an adjacent **Hot Spare** button.
8. Locate the drive that you just inserted, and click its **Hot Spare** button. The drive will be removed from the "Available Drives" section and will appear in the "Hot Spares" section.
9. Click **Done** to complete the procedure and return to the **RAID Utilities** page.

## About Clearing a Hot Spare

You can clear a **Hot Spare**, for example, if you accidentally created a Hot Spare or if you wanted to use the selected drive as a normal part of a RAID set. Choose the task you wish to perform:

- Clearing a Global Hot Spare
- Clearing a Local Hot Spare

## Clearing a Global Hot Spare

To clear a global hot spare:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page.
3. Click the icon for the MediaDirector on which you want to clear a hot spare. The MediaDirector's **Disk Utilities** page appears.
4. In the drive list, locate the desired Hot Spare and click its **Disk Drive** icon to display the **Drive Properties** page (for the selected drive).
5. At the bottom of the **Drive Properties** page, click **Clear Hot Spare**. The button's label changes to **Make Hot Spare**, the drive's status changes immediately to "Alive," and the drive is ready for use as normal drive.

## Clearing a Local Hot Spare

To clear a local hot spare:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page.
3. Click the icon for the MediaDirector on which you want to clear a hot spare. The **MediaDirector's Disk Utilities** page appears.
4. Click the **RAID Set** icon to display the **RAID Utilities** page.
5. At the bottom of the **RAID Utilities** page, click **Add/Remove Drives** to display the **Add/Remove Drives** page.
6. Scroll down to the "Hot Spares" section. Click the **Remove** button adjacent to the hot spare that you wish to clear. The drive is removed from the "Hot Spares" section and appears in the "Available Drives" section.
7. Click **Done** to complete the procedure and return to the **RAID Utilities** page.

## Changing RAID Set Wink State

To change the RAID Set wink state:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page.
3. Click the icon for the Spectrum video server on which you want to winkle a RAID set. The **Disk Utilities** page appears.
4. Click the **RAID Set** icon (or the **RAID Set Hyperlink**) to display the **RAID Set Utilities** page.
5. Check the **RAID Set Drives Wink State** line.
6. Change the RAID set's wink state as desired:
  - If currently On, click **Wink Off** to stop winking the drives in the RAID set.
  - If currently Off, click **Wink On** to start winking the drives in the RAID set.



**NOTE:** Winking drives utilizes a small amount of Fibre Channel bandwidth. For optimum system operation, do not leave drives in the wink state when not necessary.

# Chapter 7

## Using One-Click Functions

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This chapter explains how to use One-Click Functions to perform File System operations for a Spectrum video server. Choose from the following topics:

- [\*About One-Click Functions\*](#)
- [\*Viewing One-Click Functions\*](#)
- [\*Creating and Starting a File System\*](#)
- [\*Stopping all File Systems\*](#)
- [\*Starting all File Systems\*](#)
- [\*Deleting all File Systems\*](#)

### About One-Click Functions

**One-Click Functions** allow you to quickly and automatically create File Systems on Spectrum video servers that match one of the valid configurations described in [\*Spectrum Video Server File System Configuration\*](#). File Systems for configurations not described in these topics may need to be created manually.

Using a “**One-Click Function**” saves you from having to perform the following individual tasks in sequence:

1. Create a RAID set.
2. Add disk drives to the RAID set.
3. Create a File System.
4. Add the RAID Set to the File System.

Choose from the following One-Click Function tasks to perform:

- [\*Viewing One-Click Functions\*](#)
- [\*Creating and Starting a File System\*](#)
- [\*Stopping all File Systems\*](#)
- [\*Starting all File Systems\*](#)
- [\*Deleting all File Systems\*](#)

### Viewing One-Click Functions

Use this procedure to view One-Click Functions for a Spectrum video server.

**To view One-Click Functions:**

1. On the **Disk Utilities** page, click a **MediaDirector** or other video server. A sample Disk Utilities page for a MediaDirector is illustrated in [\*Figure 7-1\*](#).

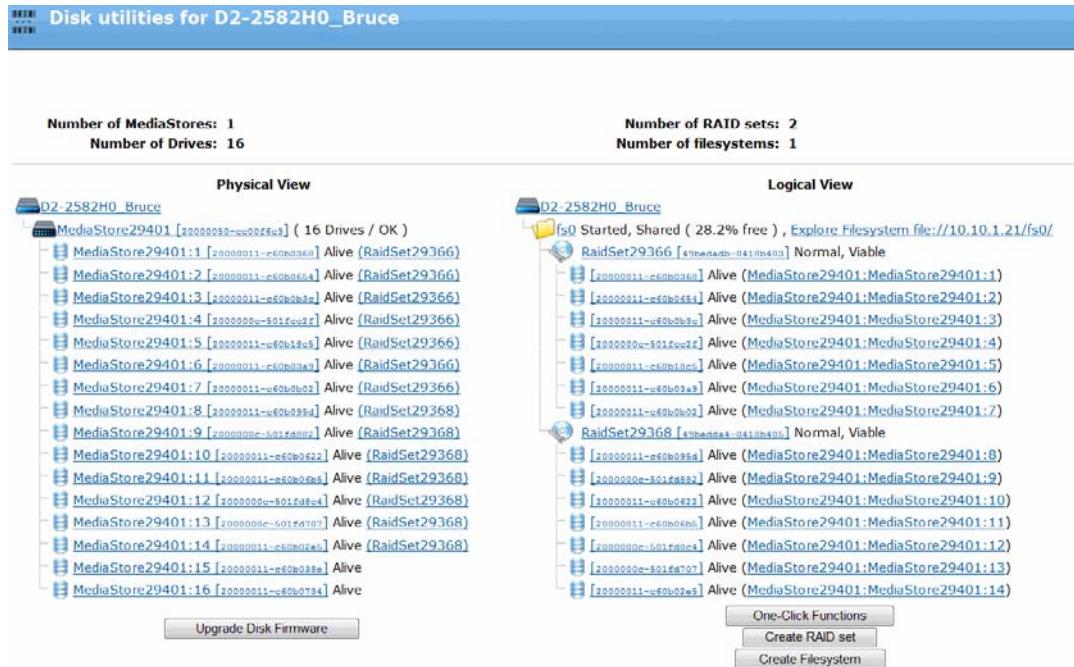


Figure 7-1: Disk Utilities

- Click the **One-Click Functions** button to display the **One-Click Functions** page.
- A sample **One-Click Functions** page is illustrated in [Figure 7-2](#).

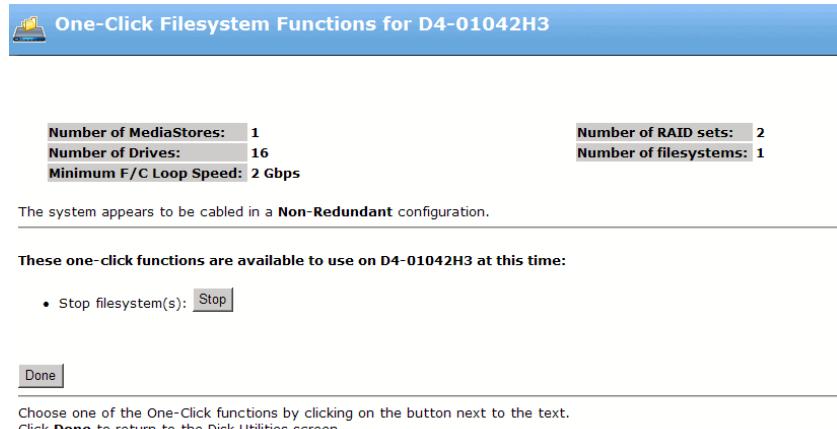


Figure 7-2: One-Click Functions

The **One-Click Functions** page is divided into sections:

- RAID sets and File Systems that the Manager application discovers. The discovery process also indicates the Minimum F/C Loop Speed: **Unknown**, **1 Gbps**, or **2 Gbps**, and the wiring configuration: **Non-redundant**, **Redundant** or **Invalid**.

- In the middle “Warning” section (if it appears), one or more messages will be shown if the system (as discovered by the Manager application) does not match a valid wiring configuration. If the “Warning” section does not appear, the system is valid and you may create a File System using “One-Click” functions.
- In the lower “One-Click Functions” section, the array of buttons *changes* depending on whether or not a File System exists.

Following are descriptions of buttons in the **One-Click Functions** section. Remember that only selected buttons appear, depending upon the File System state.

- **Start:** When the Start button appears, it indicates that the File System has already been created, and it is stopped. Click Start to start the File System on the selected MediaDirector or MediaDeck, including as many RAID sets as defined. The button disappears once the File System starts.
- **Stop:** When the Stop button appears, it indicates that a File System is running. Click Stop to stop all File Systems that are currently running. The button disappears when the File System has stopped.
- **Delete:** When the Delete button appears, it indicates that a File System has already been created, and it is stopped. Click to delete all RAID sets and all File Systems on the selected MediaDirector or MediaDeck. A “Warning” dialog appears once clicked. After confirmation, the Delete button disappears and the Create button appears.
- **Create:** When the Create button appears, it indicates that there is no File System and no RAID sets. Click to create a File System and RAID set(s) using all the drives discovered in all MediaStore(s) attached to the selected MediaDirector or located on the MediaDeck. T
  - For MediaDirectors: two mutually exclusive radio buttons accompany the Create button, allowing you to choose the type of RAID set desired:
    - **6+1+1.** Selects a RAID set with 6 data drives, 1 parity drive and 1 hot spare. This is the default selection. For example:
      - If the system sees 8 drives, a 6+1+1 RAID set is created.
      - If the system sees 16 drives, two 6+1+1 RAID sets are created.
    - **7+1.** Selects a RAID set with 7 data drives and 1 parity drive. For example:
      - If the system sees 8 drives, a 7+1 RAID set is created.
      - If the system sees 16 drives, two 7+1 RAID sets are created.

Note the following important points:

- There are no explicit hot spares created with the **7+1** selection, but hot spares can be added manually using the **Disk Utilities** page. Refer to [About Making a Hot Spare](#) for details.
- A minimum of 8 drives is required to perform a “One-Click” function.
- If you have 9 drives in the MediaStore chassis and you pick **7+1**, the ninth drive becomes a hot spare automatically.
- **Done:** Click to return to the **Disk Utilities** page.
- For the MediaDeck 7000, the **3+1** button allows you to create a file system with a 3+1 RAID set.

## Creating and Starting a File System

Use this procedure to automatically create and initialize File Systems on a new Spectrum system.

**To create and start a File System:**

1. As a prerequisite, there should be no RAID sets or File Systems present on your system.
- To remove RAID sets or File System, refer to [Deleting all File Systems](#) for details.
2. On the **Disk Utilities** page, click the **One-Click Functions** button to display the **One-Click Functions** page.
3. Choose your desired RAID set configuration. Click the **6+1+1, 7+1, or 3+1** radio button.
4. Enter the new File System's name in the **New File System Name** field, and click **Create**.
5. This action creates and starts the File System with the selected RAID set configuration.
6. Refer to [About Naming Files and System Elements](#) for proper naming conventions.
7. Click **Done** to complete the procedure and return to the **Disk Utilities** page.



**NOTE:** If the MediaDirector's SMB interface displays an outdated view after creating, renaming, or deleting a file system, reboot all MediaDirectors to update the view.

## Stopping all File Systems

Use this procedure to stop all File Systems on the MediaDirector, in preparation for system configuration changes or to transport the system.

**To stop all File Systems:**

1. On the **Disk Utilities** page, click the **One-Click Functions** button to display the **One-Click Functions** page.
2. Click the **Stop** button. This action displays a warning dialog box.
3. In the dialog, click **OK** to continue. All File Systems on the MediaDirector are now stopped.
4. Click **Done** to complete the procedure. You may now restart the File System(s) or delete them.

## Starting all File Systems

**To start all File Systems:**

1. On the **Disk Utilities** page, click the **One-Click Functions** button to display the **One-Click Functions** page.
2. Click the **Start** button, then click **Done** to complete the procedure.

## Deleting all File Systems

Use these steps to delete all MediaDirector File Systems, in preparation for creating a new File System.

**To delete all File Systems:**

1. On the **Disk Utilities** page, click the **One-Click Functions** button to display the **One-Click Functions** page.
2. Ensure that all File Systems are stopped. This is indicated by the presence of the **Delete** and **Start** buttons.
3. Click the **Delete** button. This action displays a warning dialog box.
4. Click **OK** to continue, then click **Done** to complete the procedure.

# Chapter 8

## Spectrum Video Server File System Maintenance

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This chapter provides File System maintenance utilities. Choose from the following topics:

- [\*Viewing Drive Properties\*](#)
- [\*Viewing RAID Set Information\*](#)
- [\*Viewing General File System Information\*](#)
- [\*Assigning a Virtual Channel to a RAID Set\*](#)
- [\*Navigating the Disk Utilities\*](#)
- [\*Upgrading Drive Firmware\*](#)
- [\*Failing a Drive\*](#)
- [\*Unfailing a Drive\*](#)
- [\*Replacing a Failed Drive\*](#)
- [\*Renaming a RAID Set\*](#)
- [\*Stopping a RAID Set Rebuild in Progress\*](#)
- [\*Restarting a RAID Set Rebuild\*](#)
- [\*Starting the File System\*](#)
- [\*Stopping the File System\*](#)

### Viewing Drive Properties

On the **Drive Properties** page you can view general information about a specific drive as well as perform drive-related tasks.

**To view drive properties:**

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Spectrum Disk Utilities** page.
3. Click the icon for the Spectrum video server for which you want view drive properties. to clear a hot spare. The **Disk Utilities** page for your Spectrum video server appears.
4. In the drive list, locate the desired disk drive and click its **Disk Drive** icon to display the **Drive Properties** page (for the selected drive) as shown in [\*Figure 8–1\*](#).

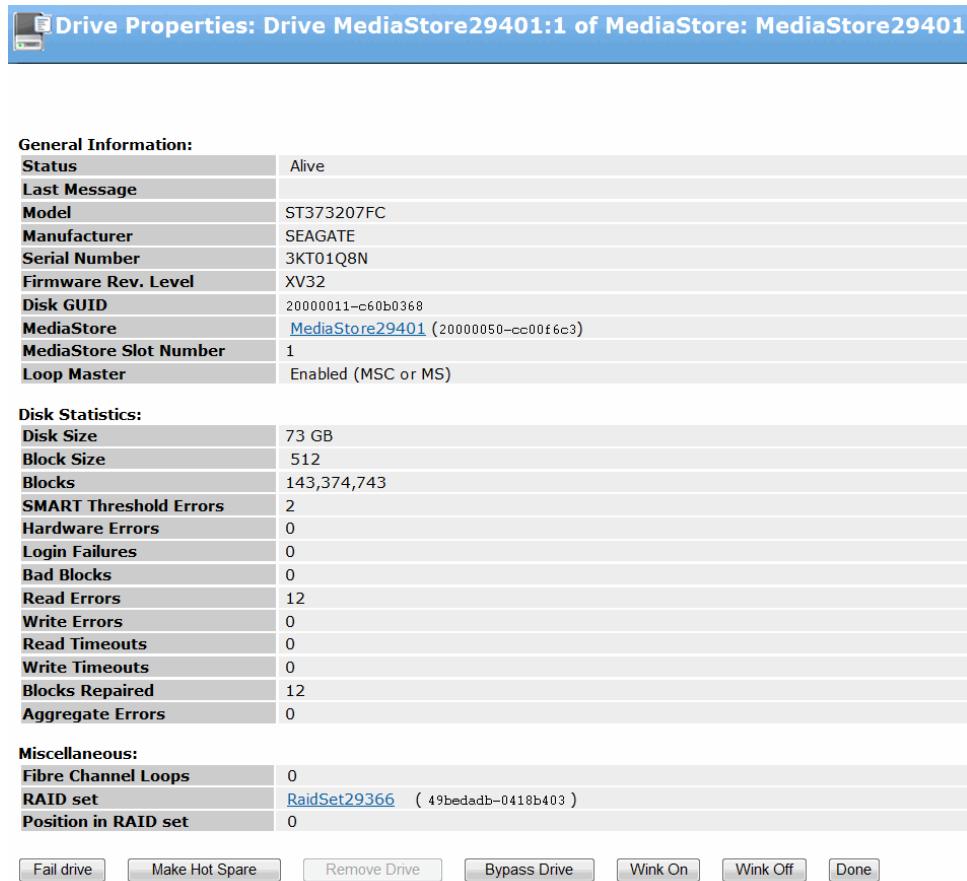


Figure 8–1: Viewing Drive Properties

In the **General Information** section you can view:

- **Status:** Lists the status of the drive: Alive, Dead, or Missing.
- **Last Message:** This line displays the last error message (generated by the SystemManager) that deals with the selected drive.
- **Model:** Lists the model number of the drive.
- **Manufacturer:** Lists the name of the drive's manufacturer.
- **Serial Number:** Lists the serial number of the selected drive.
- **Firmware Rev. Level:** Lists the firmware revision level of the selected drive. Note that drive firmware can be updated from the application.
- **Disk GUID:** Lists the specific GUID (Global Unique Identifier) of the selected drive.
- **MediaStore:** Lists the MediaStore in which the selected drive is physically located. Click the hyperlink to jump to the MediaStore's "Properties" page.
- **MediaStore Slot Number:** Lists the slot number where the drive is located.
- **Loop Master:** Displays whether a drive has been upgraded (converted) to the latest drive technology available from Harmonic. The following text may appear in this field:

- Enabled (MS and MSC):** Indicates the drive has been upgraded to the latest drive technology.
- Disabled (MSC Only):** Indicates the particular drive has not been upgraded. As Spectrum Systems do not support intermixing drives with older drive technology and the latest new technology, drives which are labeled as **MSC only** should undergo the technology conversion process before being mixed with drives which are built on the new technology (MS-4000 Series MediaStores).



**NOTE:** Contact Technical Support for details on upgrading systems with existing MSC-4000 Series MediaStores to the new disk technologies.

In the **Disk Statistics** section you can view:

- **Disk Size:** Shows the disk size (in GB) of the selected drive.
- **Block Size:** Displays the block size of the selected drive.
- **Blocks:** Shows the number of blocks on the selected drive.
- **SMART Threshold Errors:** Shows the number of SMART warnings. This value is not affected by bad block repairs or disk reformatting. If this value is greater than zero, the SystemManager displays a Critical level alarm (red) and the drive should be replaced as soon as possible. Refer to [About Proactive Drive Removal](#) for additional information.
- **Hardware Errors:** Shows the number of hardware errors reported. This value is not affected by bad block repairs or disk reformatting. If this value is greater than zero, the SystemManager displays a Critical level alarm (red) and the drive should be replaced as soon as possible. Refer to [About Proactive Drive Removal](#) for additional information.
- **Login Failures:** Shows the persistent number of login failures detected. This value is not affected by bad block repairs or disk reformatting. If this value is greater than zero, the SystemManager displays a Failure level alarm (orange). Refer to [About Proactive Drive Removal](#) for additional information.
- **Bad Blocks:** Shows the total number of bad blocks. This value increases whenever a new bad block is detected and decreases when bad blocks are repaired. If this value is greater than zero, the SystemManager displays a Failure level alarm (orange).
- **Read Errors:** Shows the total number of read errors that have occurred on this drive. This number is not reset by repairing bad blocks, but is reset by reformatting the disk. If this value is greater than zero, the SystemManager displays a Failure level alarm (orange).
- **Write Errors:** Shows the total number of write errors that have occurred on this drive. This number is not reset by repairing bad blocks, but is reset by reformatting the disk. If this value is greater than zero, the SystemManager displays a Failure level alarm (orange).
- **Read Timeouts:** Shows the total number of read timeouts that have occurred on this drive. This number is not reset by repairing bad blocks, but is reset by reformatting the disk. If this value is greater than zero, the SystemManager displays a Failure level alarm (Orange).
- **Write Timeouts:** Shows the total number of write timeouts that have occurred on this drive. This number is not reset by repairing bad blocks, but is reset by reformatting the disk. If this value is greater than zero, the SystemManager displays a Failure level alarm (orange).
- **Blocks Repaired:** Shows the number of bad blocks that have been repaired. This number increases when bad blocks are repaired, and is reset when the disk is reformatted.
- **Aggregate Errors:** Shows the number of errors represented by the current bad block list. This number decreases if bad blocks are repaired, and is cleared if the disk is reformatted.

- **SSD life expectancy:** (For solid-state drives only) Displays the life expectancy of the solid-state drive as a percentage. When the life expectancy reaches 1%, the drive should be replaced. For replacement instructions, refer to the *Spectrum System Component Replacement Guide*.

In the **Miscellaneous** section you can view:

- **Fibre Channel Loops:** Lists the individual Fibre Channel loops available.
- **RAID set:** Click the **RAID Set** hyperlink to access the **RAID Utilities** page.
- **Position in RAID set:** Lists the location of the selected drive in relation to the RAID set. If there were eight drives in a RAID set, the first drive would be in position 0 (zero). The positions of all drives in the RAID set are shown on the **Disk Utilities** page.

At the bottom of the page you can view the following buttons:



**NOTE:** Depending on the type of video server, some buttons may not appear.

- **Fail Drive:** Click to fail the selected drive, and change its status to "Dead, Failed." If you suspect that a drive is faulty, you can fail it, remove it from the enclosure and replace it with a new drive, whereupon "rebuild" begins automatically. When you fail a drive, the Unfail Drive button appears. This allows you to return a failed drive to service without performing a rebuild. The File System does not need be stopped for either procedure. Refer to [Failing a Drive](#) and [Unfailing a Drive](#) for instructions.



**CAUTION:** Failing a drive is a drastic measure that should only be performed by qualified service personnel. It is important to note that sometimes you cannot unfail a failed drive.

- **Make Hot Spare:** Click to change the status of the selected drive to "Alive, Hot Spare." Note that when you make a hot spare, a new Clear Hot Spare button appears. Refer to [About Making a Hot Spare](#) and [About Clearing a Hot Spare](#) for instructions.
- **Remove Drive:** (not available for SSDs) When a drive is dead and has been removed from the system, the drive's information still remains on the **Disk Utilities** page and in the database. Click Remove Drive to remove the drive from the associated Spectrum video server and from both the **Disk Utilities** page and the database. Note that this button only appears if the drive is dead. Refer to [Removing Drives from a RAID Set](#) for instructions.



**NOTE:** In an EFS setup, you must remove the "dead" drive from each of the MediaDirectors in the system.

- **Bypass Drive:** Click to bypass a disk drive before attempting to remove the drive. Once a drive is bypassed it should then be removed promptly to maintain correct SES functionality.

Refer to the *Spectrum System Component Replacement Guide* for detailed instructions on how to safely replace a disk drive.

- **Wink On:** Click to wink the selected drive. When on, the LEDs for the selected drive wink on the front panel of the MediaStore.
- **Wink Off:** Click to stop winking the selected drive.
- **Done:** Click to save any changes and return to the **Disk Utilities** page.

## About Proactive Drive Removal

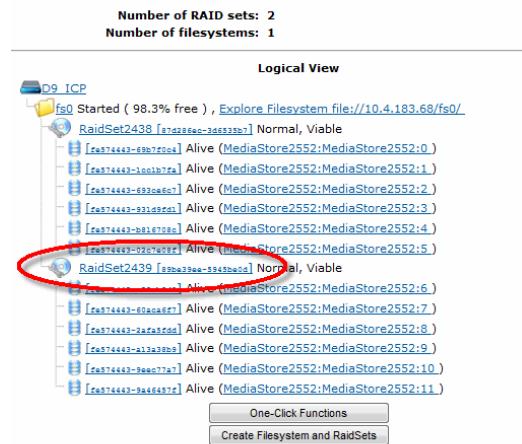
For Spectrum systems with version 4.1 or later, drives which report SMART warnings, hardware errors, and some persistent login failures are removed from the RAID set provided that: A. The RAID set has a hot spare, B. No other drives in the RAID set have bad blocks and C. The RAID set is not already compromised or in the process of rebuilding. Refer to “About Proactive Drive Alarming and Removal” in the *Spectrum System Hardware Orientation Guide* for additional information.

## Viewing RAID Set Information

On the **RAID Utilities** page you can view general information about a particular RAID set and also perform a variety of tasks including changing the RAID set’s name, adding and removing drives from the RAID set, manually starting a “rebuild” and setting the RAID set’s channel.

### To view RAID set information:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available Spectrum video servers appears.
3. Click the icon for the Spectrum video server whose RAID set information you want to view. The Spectrum video server’s **Disk Utilities** page appears.
4. Click the **RAID Set** icon (or the **RAID Set Hyperlink**) for the RAID set about which you want information.



**Figure 8–2: RAID Set Icon**

5. The **RAID Utilities** page displays similar to the following figure. *Figure 8–3* displays an example of the **Information** section.

RAID utilities for RaidSet1794 on D2-02140H0_W1 / D2-02140H1_W1																																								
<b>Information:</b>																																								
<table><tr><td><b>Name</b></td><td>RaidSet1794</td><td><a href="#">Change</a></td></tr><tr><td><b>Status</b></td><td colspan="2">Normal, Attached, Viable</td></tr><tr><td><b>Last Message</b></td><td colspan="2"></td></tr><tr><td><b>Type</b></td><td colspan="2">Protected</td></tr><tr><td><b>Channel</b></td><td colspan="2">A</td></tr><tr><td><b>File system</b></td><td colspan="2"><a href="#">fs0 ( fee98c7f-0700b802 )</a></td></tr><tr><td><b>Total Blocks</b></td><td colspan="2">17921792</td></tr><tr><td><b>Rebuild Status</b></td><td colspan="2">Not Started</td></tr><tr><td><b>Rebuild Blocks Completed</b></td><td>0 ( 0% )</td><td></td></tr><tr><td><b>Rebuild Blocks To Do</b></td><td>0 ( 0% )</td><td></td></tr><tr><td><b>Rebuild Time Elapsed</b></td><td colspan="2">0 seconds</td></tr><tr><td><b>RAIDset drives wink state</b></td><td>Off</td><td><a href="#">Wink on</a></td></tr><tr><td><b>GUID</b></td><td colspan="2">fee98c80-0700b803</td></tr></table>		<b>Name</b>	RaidSet1794	<a href="#">Change</a>	<b>Status</b>	Normal, Attached, Viable		<b>Last Message</b>			<b>Type</b>	Protected		<b>Channel</b>	A		<b>File system</b>	<a href="#">fs0 ( fee98c7f-0700b802 )</a>		<b>Total Blocks</b>	17921792		<b>Rebuild Status</b>	Not Started		<b>Rebuild Blocks Completed</b>	0 ( 0% )		<b>Rebuild Blocks To Do</b>	0 ( 0% )		<b>Rebuild Time Elapsed</b>	0 seconds		<b>RAIDset drives wink state</b>	Off	<a href="#">Wink on</a>	<b>GUID</b>	fee98c80-0700b803	
<b>Name</b>	RaidSet1794	<a href="#">Change</a>																																						
<b>Status</b>	Normal, Attached, Viable																																							
<b>Last Message</b>																																								
<b>Type</b>	Protected																																							
<b>Channel</b>	A																																							
<b>File system</b>	<a href="#">fs0 ( fee98c7f-0700b802 )</a>																																							
<b>Total Blocks</b>	17921792																																							
<b>Rebuild Status</b>	Not Started																																							
<b>Rebuild Blocks Completed</b>	0 ( 0% )																																							
<b>Rebuild Blocks To Do</b>	0 ( 0% )																																							
<b>Rebuild Time Elapsed</b>	0 seconds																																							
<b>RAIDset drives wink state</b>	Off	<a href="#">Wink on</a>																																						
<b>GUID</b>	fee98c80-0700b803																																							

Figure 8-3: RAID Utilities—Information Section

- **Name:** Click to rename a RAID set. Refer to [Renaming a RAID Set](#) for instructions.
- **Status:** Displays the current status of the selected RAID set.
- **Last Message:** This line displays the last error message (generated by the SystemManager) that deals with the selected RAID set.
- **Type:** Lists whether or not the RAID set is protected or un-protected.
- **Channel:** Lists the virtual channel that the RAID set is using. The channel designation gives the MediaDirector information on how to map RAID sets to Fibre Channel loops. The loop is the physical wire (connecting the MediaDirector to the MediaStore) while the channel is a virtual grouping of RAID sets. The MediaDirector maps channels to loops in order to optimize for bandwidth. This depends upon how many channels, loops and RAID sets are present. With one MediaDirector, one RAID set and one loop, the default is channel A. However, the ability to map channels becomes more important when more than one loop or RAID set is present, when you are creating a new File System or when you are adding a RAID set to an existing File System. Refer to [Creating a MediaDirector File System](#) and [About Disk Subsystem Performance Factors](#) for more information about channels.
- **File System:** Click the **File System** hyperlink to access the **File System Utilities** page for the selected RAID set.
- **Total Blocks:** Lists the total number of blocks of all drives in the RAID set.
  - **Rebuild Status:** Displays whether or not a “rebuild” has been started.
  - **Rebuild Blocks Completed:** Lists the number of completed blocks in the rebuild.
  - **Rebuild Blocks To Do:** Lists the number of blocks left to be rebuilt.
  - **Rebuild Time Elapsed:** Displays the running time of the rebuild process.
- **RAID set drives wink state:** Click to change the wink state of all drives in the RAID set. When on, the LEDs on each drive in the RAID set wink on the MediaStore’s front panel. Refer to [Changing RAID Set Wink State](#) for instructions.
- **GUID:** Displays the GUID of the complete RAID set. [Figure 8-4](#) displays an example of the **RAID Set Drive** section.

**7 Drives in this RAID:**

MediaStore12096:00, ( <a href="#">3KT01FJD</a> )	ST373207FC, Alive
MediaStore12096:00, ( <a href="#">3KT01JJH</a> )	ST373207FC, Alive
MediaStore12096:00, ( <a href="#">3KT01QP1</a> )	ST373207FC, Alive
MediaStore12096:00, ( <a href="#">3KT01KCV</a> )	ST373207FC, Alive
MediaStore12096:00, ( <a href="#">3KT01QFV</a> )	ST373207FC, Alive
MediaStore12096:00, ( <a href="#">3KT01FFY</a> )	ST373207FC, Alive
MediaStore12096:00, ( <a href="#">3KT4R7X9</a> )	ST373207FC, Alive

**0 Hot Spare Drives attached to this RAID.**

**Actions:**

[Add/Remove Drives](#) [Set Channel](#) [Start Rebuild](#) [Suspend Rebuild](#) [Continue Rebuild](#) [Abort Rebuild](#) [Done](#)

**Figure 8–4: RAID Utilities—RAID Set Drive Section**

- **Drive ID List:** Lists the MediaStore name in which the RAID set lives, and the position of each drive in the MediaStore.
- **Drive Serial Number:** Click the Drive Serial Number hyperlink to access the **Drive Properties** page for the selected drive.



**NOTE:** In the **Actions** section of the page, some of the following buttons may not appear depending on the type of video server.

- **Add/Remove Drives:** Click to add or remove drives from the selected RAID set.
- **Set Channel:** Click to access the **Modify Channel** page, which specifies the channel that you wish to use for the selected RAID set. As detailed above, the channel designation gives the MediaDirector information on how to map RAID sets to Fibre Channel loops.
- **Start Rebuild:** Click to manually start a “rebuild” after a drive failure has occurred, or after a drive has been replaced. Refer to [Restarting a RAID Set Rebuild](#) for instructions.

To ensure SES (Software Enclosure Services) during the rebuild process, disk drives must be installed in the following drive slots of the enclosure:

**For 4000 Series MediaStores**—in slots 1 and 16.

- **Suspend Rebuild:** Click to manually suspend a “rebuild” after the rebuild process has been started.
- **Continue Rebuild:** Click to manually continue a “rebuild” after the rebuild process has been suspended.
- **Abort Rebuild:** Click to manually abort a “rebuild” after the rebuild process has been started.
- **Done:** Click to save any changes on the **RAID Utilities** page and return to the **Disk Utilities** page.

## Viewing General File System Information

On the **File System Utilities** page you can view general information about a Spectrum video server's File System as well as perform a variety of tasks including starting and stopping the File System.

### To view general File System information:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available Spectrum video servers appears.
3. Click the icon for the Spectrum video server for which you want to view a File System. The **Disk Utilities** page for that Spectrum video server is displayed.

The screenshot shows the 'File System Utilities' interface. At the top, it displays summary information: 'Number of MediaStores: 1' and 'Number of Drives: 16' on the left, and 'Number of RAID sets: 2' and 'Number of filesystems: 1' on the right. Below this, there are two main sections: 'Physical View' and 'Logical View'. The 'Physical View' section lists 16 drives under 'D4-01042H0\_W1 / D4-01042H2\_W1', each with a unique identifier and status (Alive or Dead). The 'Logical View' section shows two RAID sets, RaidSet1419 and RaidSet1421, each with multiple logical volumes ('fs0' through 'fs15') and their respective statuses. At the bottom, there are three buttons: 'Upgrade Disk Firmware', 'One-Click Functions' (with 'Create RAID set' and 'Create filesystem' options), and a large red 'Start' button.

Figure 8-5: File System Hyperlink

4. Click the **File System Hyperlink** to display the **File System Utilities** page as shown in [Figure 8-6](#).

 **Filesystem utilities for fs0 on D2-02140H0\_W1 / D2-02140H1\_W1**

**Information:**

<b>Name</b>	fs0	(Stop the filesystem to change the name)
<b>Status</b>	Started	
<b>Fibre Channel Loop Allocation Status</b>	Optimal	
<b>Last Message</b>		
<b>Total Space</b>	880.89 GB	
<b>Free Space</b>	31.26 GB ( 3.5% )	
<b>Non-Volatile Journaling</b>	On	
<b>Mode</b>	Read/Write	
<b>Sharing with other MediaDirectors</b>	On	
<b>Mountpoint</b>	/fs0	
<b>Filesystem drives wink state</b>	Off	Wink on
<b>Character Set Db loaded</b>	Yes	
<b>GUID</b>	fee98c7f-0700b802	

**2 RAID sets**

RaidSet1794	Normal, Protected, Viable	(Stop FS to detach)
RaidSet1796	Normal, Protected, Viable	(Stop FS to detach)

There are 0 unattached RAID sets on D2-02140H0\_W1 / D2-02140H1\_W1.

**Figure 8-6: File System Utilities**

In the **Information** section you can view the following:

- **Name:** Lists the File System's name.
- **Status:** Displays whether the File System is "Started" or "Not Started."
- **Fibre Channel Loop Allocation Status:** Indicates the status of Fibre Channel wiring between the MediaDirector and the MediaStores.
  - **Not Started** – The File System has not been started.
  - **Failed** – The MediaDirector attempted to start the File System, but was not able to access all of the File System's RAID sets. At this point, the File System is unusable and Fibre Channel wiring should be checked.
  - **Sub-optimal** – The MediaDirector was able to access all the File System's RAID sets, however, the Fibre Channel wiring appears to be unbalanced. Check that all the wiring is present and working.
  - **Optimal** – The MediaDirector was able to access all the File System's RAID sets, and the Fibre Channel wiring is balanced.
- **Last Message:** This line displays the last error message (generated by the SystemManager) that deals with the selected File System.
- **Total Space:** Lists the total amount of space on your File System.
- **Free Space:** Lists the amount of space remaining to which you can record.

- Non-Volatile Journaling:** When **On**, indicates that the Spectrum video server is storing information about this File System in non-volatile memory. When a power failure occurs, information will not be lost. When **Off**, the Spectrum video server is not storing information about the system. This option is selected on the **Initialize File System** page or the **Start File System** page. Only one File System may have this property turned on.

Refer to [Initializing a File System](#) and [Creating a MediaDirector File System](#) for additional instructions.

- Mode:** Displays if the File System is read only or read/write.
- Sharing with Other MediaDirectors:** When **On**, indicates that this File System is shared with other MediaDirectors, and that the MediaDirector is participating in the EFS (Extended File Sharing) group. When **Off**, indicates that the File System is not shared with any other MediaDirector. The validity of this indicator is based on proper system wiring, and all MediaDirectors working properly.



**NOTE:** If your system is configured with EFS and the indicator is **Off**, you have a configuration problem. Resolve the problem before continuing.

- Mountpoint:** Lists the File System's mounting point – the directory name and location where the File System appears. A primary File System is always mounted at “/ filesysname”, meaning that it appears at the root of the directory name space with its own name.
- File System Drives Wink State:** Click to change the wink state of all drives in the File System. When on, the LEDs on each drive in the File System will wink.

Refer to [Changing File System Wink State](#) for instructions.

- Character Set DB Loaded:** Indicates whether the file necessary for Unicode conversion is loaded on the File System. If the status is Yes, the file needed for Unicode conversion is available to the File System. If the status is No, the file needed for Unicode is missing and no conversion can take place.
- GUID:** Lists the File System's GUID (Global Unique Identifier).

You can view the following information in the **RAID Set** section:

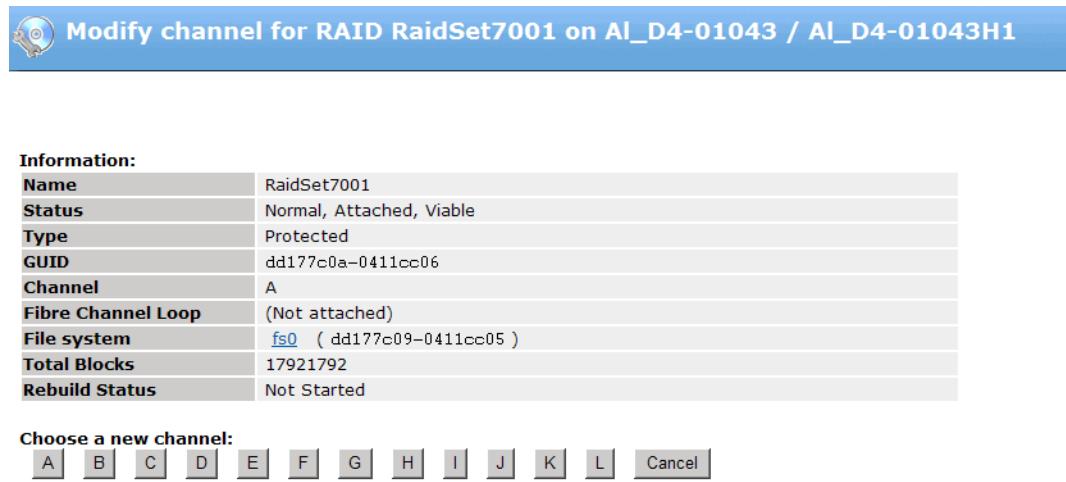
- RAID Set:** Click the RAID Set hyperlink to access the **RAID Utilities** page.
- Stop FS / Start FS:** Click to start/stop the File System, to make changes to the RAID sets. Refer to [Stopping the File System](#) and [Starting the File System](#) sections for instructions.
- Done:** Click to save any changes and return to the **Disk Utilities** page.

## Assigning a Virtual Channel to a RAID Set

On the **Modify Channel** page you can select a virtual channel to use on a specific RAID set.

### To assign a virtual channel:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available MediaDirectors will be shown.
3. Click the icon for the MediaDirector on which you want to “unfail” a drive. The **Drive Utilities** page appears.
4. Click the **RAID set** link to display the **RAID Utilities** page.
5. *With the File System stopped*, click the **Set Channel** button at the bottom of the page to display the **Modify Channel for RAID** page as shown in [Figure 8-7](#).



**Note:** Changing the channel on a RAIDset will not have any effect until the filesystem is next started or initialized.  
Changing the channel on a RAIDset that already has media recorded onto it may cause the existing media to become inaccessible. Omneon recommends that the filesystem must be initialized (hence erasing all media) after changing any RAIDset's channel.

**Figure 8-7: Modify Channel for RAID**

Assign a virtual channel as follows:

- **Channel A through H:** Click to assign a virtual channel to a physical RAID set loop, thereby optimizing bandwidth with regard to the new RAID set in the File System. When a new RAID set is added to a MediaStore, and a new Fibre Channel loop is also connected, the RAID set must be assigned a different virtual channel than the original (or existing) RAID sets in order to increase bandwidth along with the increased storage capacity.

Refer to [Creating a MediaDirector File System](#) for more information about channels.

## Navigating the Disk Utilities

To reach the **Disk Utilities** page (and all associated linked pages) for a particular Spectrum video server, follow these steps:

1. Click the **Configuration** tab.
2. Click the **Disk Utilities** icon in the left-hand column to display the **System Disk Utilities** page, a sample of which is shown in [Figure 8-8](#). This page provides a list of all Spectrum video servers attached to the SystemManager.



Figure 8-8: System Disk Utilities

- Click a Spectrum video server icon to show the **Disk Utilities** page (*Figure 8-9*) for that Spectrum video server alone. Note that this page applies to both hosts, because disks are shared between hosts.

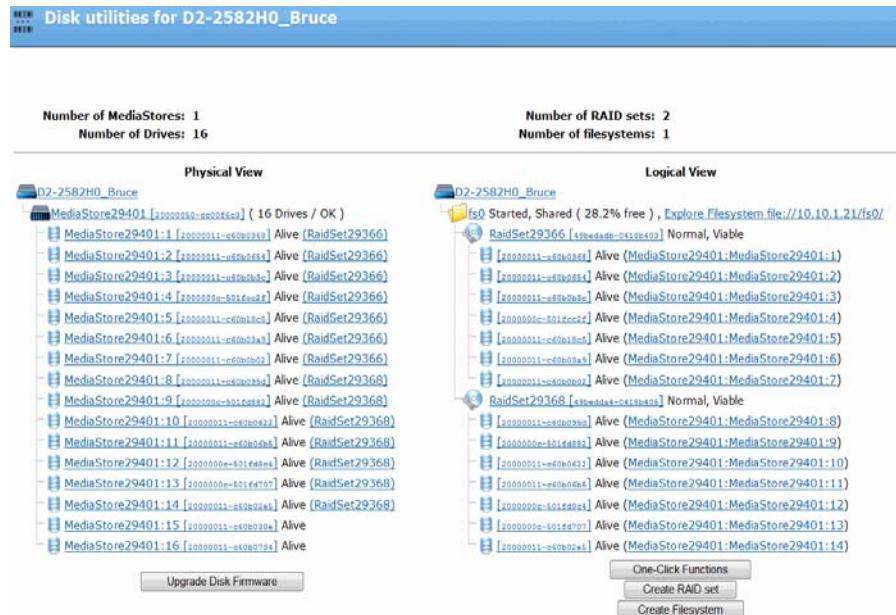


Figure 8-9: MediaDirector Disk Utilities

## Upgrading Drive Firmware

Refer to **Upgrading Disk Drive Firmware** in the *Spectrum System Getting Started Guide* for complete instructions on upgrading the disk drive firmware.

Use this procedure to remove a drive from a RAID set, when the drive is experiencing a loss of data. This step is performed as a prerequisite to removing the drive from the chassis and then replacing it with a new drive, at which time the RAID set “rebuild” occurs automatically (provided that the new drive is formatted).

**To fail a drive:**

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available Spectrum video servers will be shown.
3. Click the icon for the Spectrum video server on which you want to fail a drive. The **Disk Utilities** page for that Spectrum video server appears.
4. Click the **Disk Drive** icon (or the **Disk Drive** hyperlink) to display the **Drive Properties** page (for the selected drive).
5. At the bottom of the page, click **Fail Drive**.
6. When the confirmation dialog appears, click **OK** to accept.

The drive status now appears as “**Dead**” on the **Disk Utilities** page. Continue the procedure by replacing the drive.

Refer to the *Spectrum System Component Replacement Guide* for instructions.

## Unfailing a Drive

Use the “unfail” procedure if you accidentally fail the wrong drive. The procedure “might” work to restore the drive to service. Perform this process only on drives that have been manually failed. Drives that have been declared “**Dead**” by the Spectrum video server, however, cannot be unfailed.

**To unfail a drive:**

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available Spectrum video servers will be shown.
3. Click the icon for the Spectrum video server on which you want to “unfail” a drive. The **Disk Utilities** page for that Spectrum video server appears.
4. Click the **Disk Drive** icon (or the **Disk Drive Hyperlink**) to display the **Drive Properties** page (for the selected drive).
5. At the bottom of the page, click **Unfail Drive**.

On the **Disk Utilities** page, the drive’s status should now appear as “**Alive**.” If it does not (if the status remains “**Dead**”), contact Technical Support or replace the failed drive. Refer to the *Spectrum System Component Replacement Guide* for instructions.

## Replacing a Failed Drive

In the event of a disk drive failure, replacement disk drives are available from Harmonic. Before you attempt to remove a failed drive, refer to the *Spectrum System Component Replacement Guide* and follow the drive replacement instructions for your device.

## Renaming a RAID Set

Use this feature to rename a RAID set. This process makes it easier to identify a selected RAID set, especially in Harmonic systems that use multiple MediaStores or multiple loops.

### To rename a RAID set:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available Spectrum video servers will be shown.
3. Click the icon for the Spectrum video server on which you want to rename a RAID set. The **Disk Utilities** page for that Spectrum video server appears.
4. Click the **RAID Set** icon (or the **RAID Set Hyperlink**) to display the **RAID Set Utilities** page.
5. At the top of the page, click **Change** to display the **Change RAID Set Name** page.
6. Enter the new RAID set name and click **Update**. The system returns to the **RAID Set Utilities** page.
7. Click **Done** to return to the **Disk Utilities** page, where the new RAID set name appears.

## Stopping a RAID Set Rebuild in Progress

Use this procedure to stop a RAID set “rebuild” in progress. Note that when the rebuild stops, the RAID set is left in a compromised state. In this state, the RAID set can still be used, but there is no protection. If another drive is lost, your content will also be lost.

The rebuild might be manually stopped, for example, if you noted that the rebuild was occurring to the wrong Hot Spare. More likely, you might stop the rebuild if it was taking away bandwidth from an important on-air operation. Once stopped, the rebuild can be started again successfully.

### To stop a rebuild in progress:

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available Spectrum video servers will be shown.
3. Click the icon for the Spectrum video server on which you want to stop the rebuild. The **Disk Utilities** page for that Spectrum video server appears.
4. Click the **RAID Set** icon (or the **RAID Set Hyperlink**) for the RAID set that is currently rebuilding. The **RAID Set Utilities** page will be displayed.
5. Scroll to the bottom of the page and click **Abort Rebuild**.
6. Verify that the Rebuild status field reads “**Aborted**.” Note that the button’s name changes to **Start Rebuild**.

The rebuild has now been stopped, but it can be started again successfully.

Refer to [Restarting a RAID Set Rebuild](#) for details.

## Restarting a RAID Set Rebuild

Normally, the rebuilding of a RAID set occurs automatically when a drive fails and a Hot Spare is available. The rebuild can also occur when a failed drive is replaced.

To ensure SES (Software Enclosure Services) during the rebuild process, disk drives must be installed in the following drives slots of the enclosure:

- For 4000 Series MediaStores—in slots 1 and 16.

**To restart a RAID set rebuild:**

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available Spectrum video servers will be shown.
3. Click the icon for the Spectrum video server on which you want to restart the RAID set “rebuild” process. The **Disk Utilities** page for that Spectrum video server appears.
4. Click the **RAID Set** icon (or the **RAID Set Hyperlink**) for the RAID set that has stopped rebuilding. The **RAID Set Utilities** page will be displayed.
5. Scroll to the bottom and click **Start Rebuild**. The status field changes to “**Rebuilding**.”
6. Click **Done** to return to the **Disk Utilities** page.

## Starting the File System



**NOTE:** This procedure is used when starting a File System manually. Note that this procedure is automatically performed as part of the “One-Click” File System feature. Refer to <Hyperlink>“Using One-Click Functions” for more information.

Use this procedure to start an existing File System that has been previously initialized. The procedure is typically used after performing maintenance on the File System, or when starting a File System in a multi-MediaDirector configuration. To start (and initialize) a File System for the *first time*, immediately after the File System has been created, use the File System initialization procedure. Refer to *Initializing a File System* for details.

**To start a File System:**

1. Click the **Configuration** tab to display the **Configuration** page.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available Spectrum video servers will be shown.
3. Click the icon for the MediaDirector on which you want to start a File System. The MediaDirector’s **Disk Utilities** page appears.
4. Under the Logical View, click the File System hyperlink (see *Figure 8-10*) to display the **File System Utilities** page.

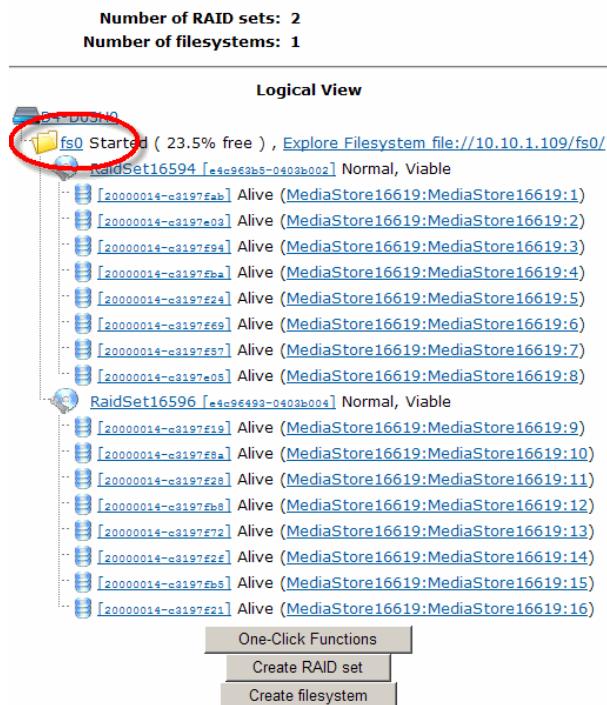


Figure 8–10: File System hyperlink

- At the bottom of the **File System Utilities** page, click the **Start FS** button to display the **Start File System** page. This button only appears when the File System is stopped.



**CAUTION:** Do not click "Initialize FS." This will wipe out the entire file system.

- Select the desired File System options: **NVRAM Journaling, Read-only, Use Previous Start, and Save Options**.



**NOTE:** In most cases, you should not need to change the options from the default selections.

- Click **Start** to accept the selected options and start the File System. The system automatically returns to the **File System Utilities** page.
- Verify that the File System's status has changed to **Started**.
- Click **Done** to return to the **Disk Utilities** page.

## Stopping the File System

This procedure stops the File System(s) on the selected Spectrum video server. Follow this procedure before powering down the Spectrum video server. If this procedure is not performed, a small amount of disk space will be lost each time the Spectrum video server is powered down improperly. You may also use this procedure when you want to perform maintenance on the File System, for example, to delete it or to remove a RAID set.



**NOTE:** This procedure is used when stopping a File System manually. Note that the procedure is automatically performed as part of the "One-Click" File System feature.

**To stop the Spectrum video server file system:**

1. Click the **Configuration** tab to display the **Configuration** page and System Diagram.
2. In the left-hand column, click the **Disk Utilities** icon to display the **Disk Utilities** page. A list of available Spectrum video servers will be shown.
3. Click the icon for your Spectrum video server. The **Disk Utilities** page for that Spectrum video server appears.
4. Click the file system hyperlink, as shown in *Figure 8–11*, to display the **Filesystem Utilities** page.

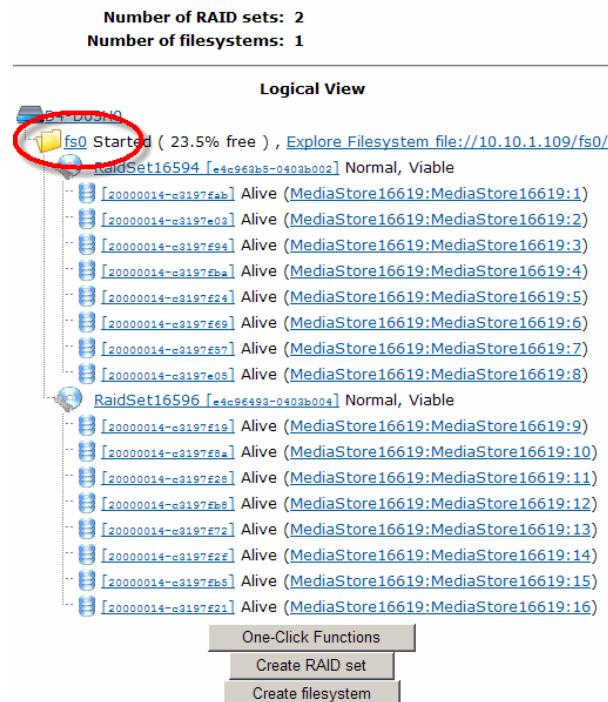


Figure 8–11: File System hyperlink

5. At the bottom of the **Filesystem Utilities** page, click the **Stop FS** button. This button only appears when the file system is started.
6. Click the **Disk Utilities** icon in the left-hand column and verify that the file system status for the Spectrum video server is **Stopped**.

The Spectrum video server can now be powered down.

# Chapter 9

## Spectrum Video Server Advanced Configuration

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This chapter provides advanced configuration and operation instructions for Spectrum video servers in a Spectrum system. Choose from the following:

Choose from the following topics:

- [\*Configuring Access Control Settings for the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000\*](#)
- [\*Setting IP Addresses through vDHCP\*](#)
- [\*Setting Static IP Addresses \(for MediaDirectors 2100, 2101, 2102, and 2102B\)\*](#)
- [\*Changing Network/File System Performance Settings \(for MediaDirectors 2100, 2101, 2102 and 2102B\)\*](#)
- [\*Changing Network/File System Performance Settings \(for MediaDirector 2252/2251, 2202/2201, MediaCenter, or MediaDeck 7000\)\*](#)
- [\*Changing Daemon Settings \(for MediaDirectors 2100, 2101, 2102 and 2102B\)\*](#)
- [\*About IP Flex Mode on a MediaDirector 2102 or 2102B\*](#)
- [\*Connecting to an Omneon MediaGrid from the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000\*](#)
- [\*Connecting to an Omneon MediaGrid \(for MediaDirectors 2100, 2101, 2102 and 2102B\)\*](#)
- [\*Changing Logging Variable Settings\*](#)
- [\*About the Domain Name System Setup\*](#)
- [\*Adding a New Spectrum Video Server\*](#)
- [\*About NetBIOS Naming\*](#)
- [\*About Device Name Limitations\*](#)
- [\*About Spectrum Video Server Network Services\*](#)
- [\*About the File Server Setup\*](#)
- [\*Changing the WorkGroup Setting \(for MediaDirectors 2100, 2101, 2102 and 2102B\)\*](#)
- [\*About Client Setup\*](#)
- [\*Browsing the Spectrum Video Server File System from a Client\*](#)
- [\*Mapping a Spectrum Video Server File System to a Windows Network Drive\*](#)
- [\*Connecting a Macintosh to the Spectrum Server using SMB\*](#)
- [\*Playing Media Files from a Spectrum Video Server on a Client PC\*](#)
- [\*Copying Files from a Spectrum Video Server to a Client PC\*](#)
- [\*Copying Files from a Client PC to a Spectrum Video Server\*](#)
- [\*About File Types\*](#)



**IMPORTANT:** The procedures outlined in this section are written for qualified technical personnel, skilled at advanced networking procedures. If you have any questions, please consult with your facility's Information Service staff or contact Technical Support.

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## Configuring Access Control Settings for the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000



**IMPORTANT:** Consult your network administrator before modifying the settings on the Access Control Settings page.



**NOTE:** The following instructions apply only to the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000.

The Spectrum Access Control Settings feature in SystemManager allows you to configure authentication settings for your video server, which can be used to connect to a Lightweight Directory Access Protocol (LDAP) server or a SAMBA domain.

Access control settings can be configured on a system-wide level, saved as a template, and applied to specific Spectrum video servers in your Spectrum system. These settings can be configured separately for each Spectrum video server and apply to the root level of the Spectrum video server file system.



**NOTE:** LDAP is an industry standard protocol. For information on LDAP terminology and concepts used in this section, you can refer to several online resources including Wikipedia or the Microsoft Windows Support website.

Select from the following procedures:

- [Configuring Access Control Settings for Multiple Video Servers](#)
- [Configuring Access Control Settings for CIFS](#)
- [Configuring Access Control Settings for a Single Video Server](#)

### Configuring Access Control Settings for Multiple Video Servers

To configure Access Control Settings for multiple video servers:

1. From the **Configuration** tab, in the left-hand column, under **Spectrum**, click the **Access Control** icon. The **Access Control Settings for Spectrum Devices** page appears (see [Figure 9-1](#)).
2. Under **Local User Settings**, type the password for your video server. The default password is: user
3. In the field for **Authentication Type**, select from the following:
  - **LDAP**: select if you are connecting to an LDAP server.
  - **Local**: select if the only authentication required is the user name and password. If you select this option, the fields for LDAP Settings and SAMBA Settings will be grayed out.
  - **User-defined**: this option is provided for diagnostics purposes only.
4. In the field for **Guest Allowed**, select from the following:
  - **Yes**: if selected then no password is required to access the Spectrum video server file system.
  - **No**: if selected then a password is required to access the Spectrum video server file system.
5. Under **LDAP Settings**, enter the LDAP settings that apply to your network. Refer to [Figure 9-1](#) for an example.

- **LDAP Schema:** select from **ActiveDirectory** for Windows-based LDAP or **OpenLDAP** for the open source version of LDAP.
  - **LDAP Server:** the DNS name of the server.
  - **LDAP Base:** the string passed to the server to perform a search.
  - **LDAP Base Pw:** the string passed to the server to search for users.
  - **LDAP Bind Dn:** the string that identifies the user performing the search.
  - **LDAP Bind Pw:** the password required for the search.
6. Under **SAMBA Settings**, enter the SAMBA settings that apply to your network. Refer to [Figure 9-1](#) for an example.
- **SMB Security:** Select from **Domain** or **Non-domain**. If you select Non-domain, then only the local user name and password are required.
  - **Domain Server:** name of the domain server.
  - **SMB WorkGroup:** name of the SMB workgroup.
  - **SMB Username:** user name required to join the SMB domain.



**NOTE:** This setting is not saved as part of a template. It is only used when joining the SMB domain.

- **SMB Password:** password required to join the SMB domain.



**NOTE:** This setting is not saved as part of a template. It is only used when joining the SMB domain.

- **SMB Address:** the DNS name of the domain controller.

**Spectrum Authentication**

Local User Settings	
Username	user
Password	*****

**Authentication Type**: LDAP  
**Guest Allowed**: Yes

**LDAP Settings:**

LDAP Schema	ActiveDirectory
LDAP Server	usacme.acme.local
LDAP Base	dc=usacme,dc=acme,dc=local
LDAP Base Pw	cn=Users,dc=usacme,dc=acme,dc=local
LDAP Bind Dn	cn=coyote,cn=Users,dc=usacme,dc=acme,dc=local
LDAP Bind Pw	*****

**SAMBA Settings:**

SMB Security	<input checked="" type="radio"/> Domain <input type="radio"/> Non-domain
Domain Server	usacme
SMB WorkGroup	acme
SMB Username	coyote
SMB Password	*****
SMB Address	usacme.acme.local

**Access Control Configurable Devices**

Name	Model Number	Serial #	Network Status	Select
D8_10	MCP-2202	10	Connected	<input checked="" type="checkbox"/>
dylonD8	MCP-2202	28	Connected	<input checked="" type="checkbox"/>
D8_6	MCP-2202-210	6	Connected	<input checked="" type="checkbox"/>
D8_5	MCP-2202-210	5	Connected	<input checked="" type="checkbox"/>
JEFF_D8_38	MCP-2202	38	Connected	<input checked="" type="checkbox"/>
D8_29	MCP-2202-210	29	Connected	<input checked="" type="checkbox"/>
D8_14	MCP-2202	14	Connected	<input checked="" type="checkbox"/>

Select all  Clear

**Buttons:** Save As Template, Deploy Settings, Join Samba Domain

**Figure 9–1: Access Control Settings**

- Once you have entered all the necessary settings, click **Save as Template** to save the settings as a template.
- In the **Access Control Configurable Devices** section, select the video servers to which you want to apply the template.
  - Select All:** click to select all the Spectrum video servers listed.
  - Clear:** click to clear the check boxes.
- To apply the settings to the selected Spectrum video servers, click **Deploy Settings**.



**NOTE:** The **Deploy Settings** button also saves the current settings as a template.

- If you have entered SAMBA domain information, click **Join SAMBA Domain** to apply the SAMBA settings and join the SAMBA domain.

## Configuring Access Control Settings for CIFS

All Harmonic applications, such as ProBrowse and the Media Application Server (MAS), require a user name and password to mount the MediaDirector 2252/2251, 2202/2201, MediaCenter, or MediaDeck 7000 file system. If LDAP authentication is selected for your Spectrum video server and the file system is password protected (with guest access set to No), then the user name and password in the CIFS Authentication section of the Access Control Settings page can be used to access the file system.

### To configure Access Control Settings for CIFS Authentication

- From the **Configuration** tab, in the left-hand column, under Spectrum, click the **Access Control** icon to open the **Access Control Settings for Spectrum Devices** page.
- Scroll down to the **CIFS Authentication** section. (see [Figure 9–2](#)).

CIFS Authentication	
Username	coyote
Password	*****
Domain	acme

Save CIFS Settings

**Figure 9–2: Configuring CIFS Authentication**

- Enter your CIFS domain information as follows:

- Username:** Specify a user name in this field.
- Password:** Specify a password in this field.



**IMPORTANT:** Make sure to select a user name and password, which do not expire, unlike passwords for some directory services.

- Domain:** This field displays the domain name.
- Click **Save CIFS Settings** to save the settings. The authentication settings are saved locally on the SystemManager.

## Configuring Access Control Settings for a Single Video Server

### To configure Access Control Settings for an individual Spectrum video server:

- From the **Configuration** tab, on the **System Diagram** page, click the icon or heading for the Spectrum video server for which you want to configure access control settings. The **Physical Configuration** page appears.
- Click the icon of the Spectrum video server to display the **Properties** page.
- Under **Host Properties**, in the **Change Settings** field, click the **Access Control Settings** button. The **Access Control Settings** page for that Spectrum video server appears.
- Under **Local User Settings**, type the password for your Spectrum video server. The default password is: `user`
- In the field for **Authentication Type**, select from the following:
  - LDAP:** select if you are connecting to an LDAP server.

- **Local:** select if the only authentication required is the user name and password. If you select this option, the fields for LDAP settings and SAMBA Settings will be grayed out.
  - **User-defined:** this option is provided for diagnostics purposes only.
6. In the field for **Guest Allowed**, select from the following:
- **Yes:** if selected then no password is required to access the Spectrum video server file system.
  - **No:** if selected then a password is required to access the Spectrum video server file system.
7. Under **LDAP Settings**, enter the LDAP settings that apply to your network. Refer to [Figure 9-3](#) for an example.
- **LDAP Schema:** select from **ActiveDirectory** for Windows-based LDAP or **OpenLDAP** for the open source version of LDAP.
  - **LDAP Server:** the DNS name of the server.
  - **LDAP Base:** the string passed to the server to perform a search.
  - **LDAP Base Pw:** the string passed to the server to search for users.
  - **LDAP Bind Dn:** the string that identifies the user performing the search.
  - **LDAP Bind Pw:** the password required for the search.
8. Under **SAMBA Settings**, enter the SAMBA settings that apply to your network. Refer to [Figure 9-1](#) for an example.
- **SMB Security:** Select from **Domain** or **Non-domain**. If you select Non-domain, then only the local user name and password are required.
  - **Domain Server:** name of the domain server.
  - **SMB WorkGroup:** name of the SMB workgroup.
  - **SMB Username:** user name required to join the SMB domain.



**NOTE:** This setting is not saved as part of a template. It is only used when joining the SMB domain.

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- **SMB Password:** password required to join the SMB domain.



**NOTE:** This setting is not saved as part of a template. It is only used when joining the SMB domain.

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- **SMB Address:** the DNS name of the domain controller.

The screenshot shows the 'Access Control Settings' page for a server named 'JEFF\_D8\_38'. The top bar is blue with the title 'Access Control Settings on JEFF\_D8\_38'. Below it is a 'Local User Settings' section with fields for 'Username' (user) and 'Password' (\*\*\*\*\*). The main configuration area is divided into sections: 'Authentication Type' (LDAP), 'Guest Allowed' (Yes), 'LDAP Settings' (Schema: ActiveDirectory, Server: usacme.acme.local, Base: dc=usacme,dc=acme,dc=local, Base PW: cn=Users,dc=usacme,dc=acme,dc=local, Bind Dn: cn=coyote,cn=Users,dc=usacme,dc=acme,dc=local, Bind PW: roadrunner), and 'SAMBA Settings' (Security: Domain selected, Server: usacme, Workgroup: acme, Username: coyote, Password: \*\*\*\*\*). At the bottom are buttons for 'Save As Template', 'Deploy Template', 'Deploy Settings', 'Join Samba Domain', and 'Done'.

Figure 9–3: Access Control Settings for a single Spectrum video server

9. Once you have entered all the necessary settings, you can perform the following operations:
  - **Save as Template:** Click this button to save the settings as a template. Once the settings are saved as a template, they can be applied to other Spectrum video servers in your network. Refer to step 8 in [Configuring Access Control Settings for Multiple Video Servers](#) for instructions on applying a template to other Spectrum video servers.
  - **Deploy Template:** Click this button to apply the saved template to the Spectrum video server.
  - **Deploy Settings:** Click this button to apply the settings to the Spectrum video server.
  - **Join Samba Domain:** Click this button to apply the SAMBA settings and join the SAMBA domain.
  - **Done:** Click this button to revert to the saved settings and return to the **Properties** page.

## Setting IP Addresses through vDHCP

The Internet Protocol (IP) addresses used by Harmonic equipment can either be isolated, or part of a customer's existing network. Please note the following important points:

- Consultation with your Information Service (IS) staff or a book on TCP/IP basics is *highly recommended* before this step.

- Because there are security implications, an Internet router might be configured as a firewall to prevent unauthorized access.
- The range of IP addresses assigned to the Ethernet is called an *IP subnet*.

IP address assignment is performed through the **Dynamic Host Configuration Protocol** (DHCP). The SystemManager Platform runs Microsoft Windows 7.

If the Harmonic equipment is part of an existing network that can provide DHCP service, the third party **vDHCP** server can be turned off. In this case, the customer's network will need to provide the appropriate IP addressing information to the SystemManager and MediaDirector devices.

Despite the word "Dynamic" in its name, vDHCP should be configured to make the IP addresses as permanent (static) as possible after the initial automatic assignment. This is commonly referred to as IP address "reservation." Setting up an IP address reservation for the MediaDirector ensures that it obtains the same IP address from the vDHCP server *every time*. Reserving the MediaDirector's IP address is recommended – but not mandatory.



**NOTE:** Each MediaDirector host must have a unique IP address.

#### To set up IP address reservations for both MediaDirector hosts in the vDHCP server:

1. Determine the MediaDirector's IP and Ethernet (or MAC) address(es). To do this, ensure that the MediaDirector is powered on.
2. If the MediaDirector is properly connected within your system and powered on, it has received a single IP address (MediaDirector 2100) or multiple addresses (MediaDirector 2101, 2102, or 2102B) from the vDHCP server. To find the IP addresses:
  - a. Start the SystemManager application.
  - b. Click the **Configuration** tab to display the **Configuration** page.
  - c. In the **System** diagram, click a "single" MediaDirector host icon (not the dual host icon) to display the **Physical Configuration** page.
  - d. Click the MediaDirector's picture to display the **MediaDirector Properties** page.
  - e. At the top of the page, make a note of the selected host's IP address. The vDHCP server has assigned this IP address, but it is a dynamic IP address and not a static or "reserved" one.
  - f. Repeat steps **b** through **e** for the additional MediaDirectors and/or subsequent MediaDirector hosts.
3. Launch the vDHCP application by double-clicking the small **vDHCP** icon located in the bottom right corner of the desktop, on the Task Bar.

The "vDHCP Settings" window appears, as shown in [Figure 9-4](#).

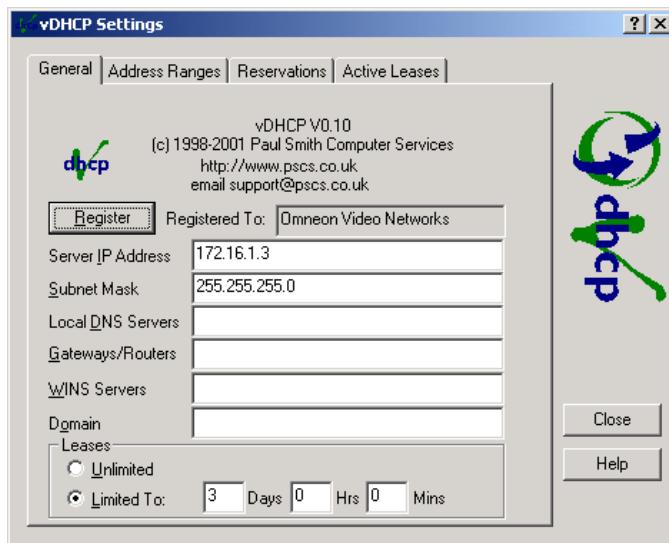


Figure 9-4: VDHCP Settings Window

- Click the “Active Leases” tab to display a list of all the IP address leases that have been assigned by the vDHCP server. A sample tab is shown in [Figure 9-5](#).

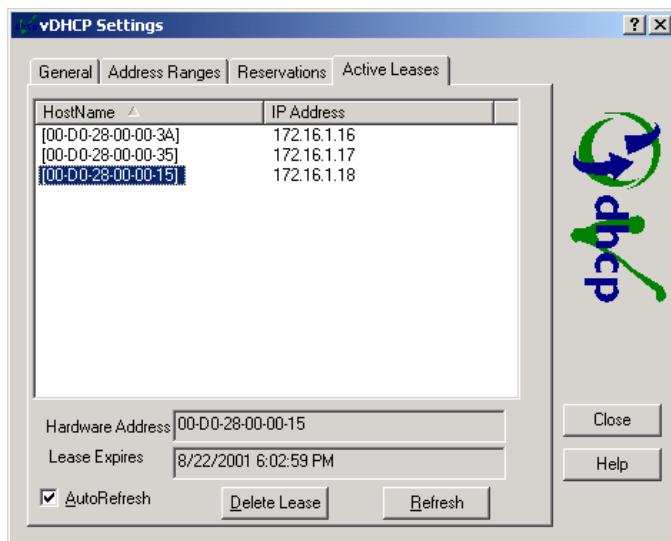


Figure 9-5: VDHCP Settings—Active Leases Tab

- In the list, highlight the entry for the first host’s IP address. Next, copy (**CTRL+C**) the Ethernet address that appears in the **Hardware Address** field.



**NOTE:** It is recommended that you use the host’s current IP address for the reservation. If you decide to use another IP address, ensure that the IP address is within the address range specified in the vDHCP UI’s “Address Ranges” tab. The range is preceded by a green check mark. In addition, ensure that the IP address that you wish to use does not currently belong to any other device, and that it is not reserved. If required, click the Help button on the vDHCP UI for more information about ranges and reservations.

- Click the **Reservations** tab, a sample of which is shown in [Figure 9-6](#).

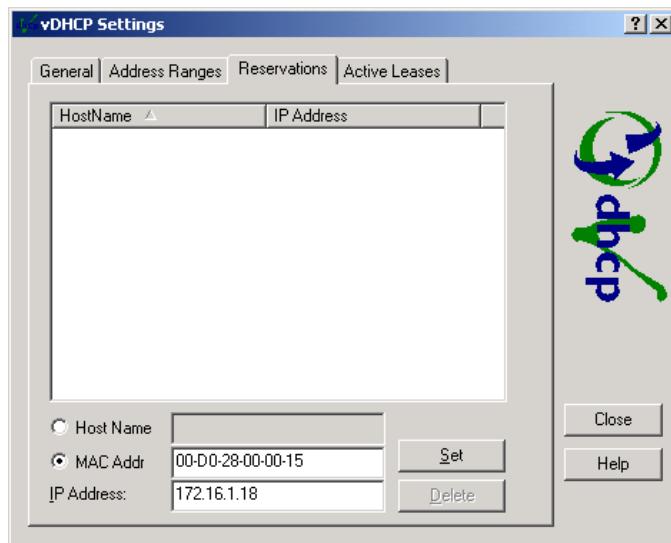


Figure 9–6: VDHCP Settings—Active Leases Tab

At the bottom, click the **Mac Addr** radio button, and paste (CTRL+V) in the Ethernet address. Next, click in the **IP Address** field and enter the host's IP address (as you noted in step 2).



**IMPORTANT:** Check your entries. The MediaDirector will not function properly if the Ethernet and IP addresses are incorrectly entered.

7. Click the **Set** button to activate the reservation for the selected host.
8. Repeat steps 4 through 7 for additional hosts.
9. Reboot the MediaDirector.

Refer to **Upgrading MediaDirector Firmware** in the *Omneon Spectrum System Getting Started Guide* for reboot instructions.

10. As outlined in step 2, navigate to each host's **MediaDirector Properties** page and ensure that the selected host has received the IP address that you just entered on the vDHCP "Reservations" tab.



**NOTE:** If you have a system that includes multiple MediaDirector, such as an EFS system, the procedure must be followed for each MediaDirector.

## Setting Static IP Addresses (for MediaDirectors 2100, 2101, 2102, and 2102B)



**NOTE:** This section applies to the The MediaDirector 2101, 2102, and 2102B only. To configure network settings on the MediaDirector 2252/2251, 2202/2201, MediaCenter, or MediaDeck 7000, refer to [Configuring Network Settings on the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000](#).

The **Change IP Settings** page allows you to set static IP addresses for MediaDirector hosts using the SystemManager.

Harmonic strongly recommends DHCP configuration unless static configuration is absolutely necessary. Typically, MediaDirector hosts receive their IP addresses from the Harmonic-supplied vDHCP application that runs on the SystemManager Platform. You may also use your facility's existing DHCP server if available. The host IP addresses are fixed by creating reservations in the DHCP server, which means that they will not change, nor be reissued to another device. The MediaDirector 2101, 2102, and 2102B have multiple hosts, one for each Ethernet port. When planning your IP address allocation, ensure that each MediaDirector host has multiple unique IP addresses. The MediaDirector 2100 requires only a single IP address.



**IMPORTANT:** The steps in this section are designed for qualified technical personnel, skilled at advanced networking procedures. If you have any questions, please consult with your facility's Information Service staff or contact Technical Support.

**To set static IP addresses of each MediaDirector host:**

1. Start the SystemManager application.
2. Click the **Configuration** tab to display the **Configuration** page.
3. In the **System** diagram, click a "single" MediaDirector host icon (not the dual host icon) to display the **MediaDirector Physical Configuration** page.
4. Click the MediaDirector's picture to display the **MediaDirector Properties** page.
5. From the **Change Settings** section, click the **IP Settings** button for the desired host

The selected host's **IP Settings** page appears as shown in *Figure 9-7*.

**IP Settings on D7-01275H0**

---

**WARNING:** Changing these IP address settings may cause the device to become non-responsive. Do so only when you are absolutely certain of what you are doing.  
Double check your entries **before** clicking the Update button.  
After making changes you may have to reboot the device.  
You may also have to remove the device from the Manager (use the Remove Device function on the Diagnostics Screen), and let the Manager re-quire the device at its new IP address.  
NOTE: You may not be able to change these settings if the Manager is not on the same IP sub-net as the device being modified.

Name	D7-01275H0
Status	Connected
Ethernet MAC	00:D0:28:0B:02:24
IP Address Configuration	Use <input type="button" value="DHCP"/>
<b>Settings retrieved from the DHCP server:</b>	
IP Address	10.10.1.60
IP Network Mask	255.255.248.0
IP Gateway	10.10.0.2
NTP Server 0	10.35.79.15
NTP Server 1	0.0.0.0
<b>Static (User-settable) settings stored in device's Non-Volatile Memory:</b>	
IP Address	<input type="text" value="10.10.7.76"/>
IP Network Mask	<input type="text" value="255.255.248.0"/>
IP Gateway	<input type="text" value="10.10.0.2"/>
NTP Server 0	<input type="text" value="0.0.0.0"/>
NTP Server 1	<input type="text" value="0.0.0.0"/>
DNS Server 0	<input type="text" value="10.10.1.91"/>
DNS Server 1	<input type="text" value="0.0.0.0"/>

---

Make changes to the IP settings, then click the **Update** button to make the changes take effect.  
Click the **Reset** button to reset the IP settings to reflect the last known MediaDirector settings.  
Click the **Done** button to return to the device properties screen.

**Figure 9–7: IP Settings**

- In the **IP Address Configuration** pull-down menu, select **Static IP**.

When **Static IP** is selected, the MediaDirector uses the IP address that is stored in its non-volatile memory. The non-volatile memory can be set using the fields in the “**Static (User-settable) Settings**” section of the **Change IP Settings** page.



**NOTE:** If DHCP is selected, the MediaDirector looks for a DHCP server on Ethernet and receives its IP address from that. Typically, this is the vDHCP service that is running on the SystemManager platform. This is the default factory configuration. IP values are displayed in the “**Settings Retrieved from DHCP Server**” section of the **Change IP Settings** page.

- Modify the **IP Address**, **IP Network Mask**, and **IP Gateway** fields as desired for the selected host, and depending on the parameters of your local network configuration.



**NOTE:** If you selected DHCP in the “**IP Address Configuration**” drop-down box, these settings are those that apply to the selected MediaDirector host. These values can be modified by changing setting in the DHCP server, and if you are not using the SystemManager’s vDHCP server, see your Network Administrator for assistance.

8. If you have made an error while entering new values, click **Reset** to return all fields on the page to their default state.
9. Click **Update** to enable all changes on the host.
10. Click **Done** to return to the **MediaDirector Properties** page.
11. Repeat steps 2 through 10 for other MediaDirector hosts.
12. Power cycle the MediaDirector.
13. Ensure that the SystemManager Platform's IP settings permit communication with the new MediaDirector host settings (the SystemManager must be configured to be on the same subnet as both MediaDirector hosts).
14. Verify MediaDirector to SystemManager communication with the new IP settings.



**NOTE:** After changing the MediaDirector's IP configuration, the SystemManager may display invalid values on the MediaDirector Properties page for five to ten minutes, while it attempts to discover the MediaDirector at its new IP address. This is expected behavior and the correct values should appear within ten minutes.

## Changing Network/File System Performance Settings (for MediaDirectors 2100, 2101, 2102 and 2102B)



**NOTE:** To change file system performance settings on the MediaDirector 2252/2251, 2202/2201, MediaCenter, or MediaDeck 7000, refer to *Changing Network/File System Performance Settings (for MediaDirector 2252/2251, 2202/2201, MediaCenter, or MediaDeck 7000)*

### To change MediaDirector network File System performance settings:

1. On the **MediaDirector Properties** page, click **Performance Settings** to display the **Change MediaDirector Network File System Performance** page as shown in *Figure 9–8*.

 **Change MediaDirector Network/Filesystem Performance Settings for MDECK-SEC-CTL**

**Network/Filesystem Performance Settings:**

Ethernet MTU Size:	1500 bytes (standard) <input style="width: 20px; height: 15px;" type="button" value="..."/>
TCP Segment Acceleration:	on (default) <input style="width: 20px; height: 15px;" type="button" value="..."/>
Filesystem Low Priority Bandwidth Limit (per MediaDirector):	Unlimited: <input type="checkbox"/> 90 Megabytes per second (Valid range: 1 - 2000) <input style="width: 20px; height: 15px;" type="button" value="..."/>

**Save** **Cancel**

---

**Warning:** These default values are important for proper operation and performance. Changing from the default settings may cause significant operational and performance problems. Settings on this page should be changed only after consultation with Omneon Support.

**Default Values:**

Ethernet MTU Size = 1500 bytes (standard)	
TCP Segment Acceleration = on	
FS Low Priority Bandwidth Limit default values in megabytes per second	
MediaDirector Model	Default Value
MCP 2101	45
MCP 2100	45
MCP 2102	90
MCP 2102B	90

---

**Reboot Required:** If changes are made, the MediaDirector must be rebooted in order for settings to take effect.

**Ethernet MTU Size:** Configures the maximum packet size of Ethernet packets. Enable jumbo frames (MTU greater than 1500 bytes) only when network infrastructure devices (switches, etc.) are operating at 1 Gbps (1000 Mbps) and are also enabled for matching MTU size.

**TCP Segment Acceleration:** Configures hardware acceleration for the sending of large TCP segments.

**Filesystem Low Priority Bandwidth Limit:** Configures a rate limit for filesystem reads and writes of clips due to FTP, Samba, AFP, or Copy Clip requests. Lower values give greater preference to filesystem reading/writing of clips for realtime purposes (play/record). This parameter is shared for all the hosts in MediaDirector.

**Figure 9–8: Change MediaDirector Network/Filesystem Performance Settings**

You can edit the following settings:

- **Ethernet MTU Size:** Configures the maximum size for Ethernet packets. The default is a standard packet size of 1500 bytes.



**NOTE:** At this time, Harmonic does not recommend changing from the standard packet size of 1500 bytes.

- **TCP Segment Acceleration:** Configures hardware acceleration for sending large TCP segments. This setting is On by default.
- **File System Low Pri BW Limit:** Configures the File System low priority bandwidth limit for File System reads and writes of clips. The default is 45 megabytes per second.



**NOTE:** At this time, Harmonic does not recommend changing from the default 45 Mbps.

- **Save:** Click to save the changes to the network/File System performance settings to the selected MediaDirector host, and return to the **MediaDirector Properties** page.
- **Cancel:** Click to return to the **MediaDirector Properties** page without saving any changes to the settings.

## Changing Network/File System Performance Settings (for MediaDirector 2252/2251, 2202/2201, MediaCenter, or MediaDeck 7000)



**IMPORTANT:** Do not change the settings on this page unless directed by Technical Support.

### To change Network/File System performance settings:

1. On the **Properties** page for your Spectrum video server, click **Low Priority Bandwidth Settings** to display the **Change MediaDirector Network/File System Performance** page as shown in *Figure 9–9*.

Network/Filesystem Performance Settings Per MediaDirector

Low Priority Bandwidth Limit (FTP & Samba)	560 MB/sec (Valid range: 0 - 600)
Low+ Priority Bandwidth Limit (AFP)	40 MB/sec (Valid range: 0 - 600)

Save Settings      Reset to Factory Defaults      Done

Note: A value of 0 implies Unlimited bandwidth.

Warning:  
Changing from the default settings may impact performance!  
Settings on this page should be changed only after consultation with Omneon Support.

Reboot Required: If changes are made, the MediaDirector must be rebooted in order for settings to take effect.

**Figure 9–9: Change MediaDirector Network/File System Performance settings**

2. You can edit the following settings:

- **Low Priority Bandwidth Limit (FTP & SAMBA):** Configures the low priority bandwidth limit for File System reads and writes of clips over FTP and SAMBA.
  - For the MediaDirector 2252, the default is 560 MB/sec. and the total valid range is 0-600.
  - For the MediaDirector 2251, the default is 280 MB/sec. and the total valid range is 0-600.
  - For the MediaDirector 2202, the default is 560 MB/sec. and the total valid range is 0-600.
  - For the MediaDirector 2201, the default is 260 MB/sec. and the total valid range is 1-299.
  - For the MediaCenter, the default is 185 MB/sec. and the total valid range is 0-225.
  - For the MediaDeck 7000, the default is 100 MB/sec and the total valid range is 0-140.



**IMPORTANT:** For the MediaDeck 7000, Harmonic recommends that you leave the default setting. Changing this setting may affect performance.

- **Low+ Priority Bandwidth Limit (AFP):** Configures the low priority bandwidth limit for File System reads and writes of clips over AFP.

- For the MediaDirector 2252, the default is 40 MB/sec. and the total valid range is 0-600.
- For the MediaDirector 2251, the default is 40 MB/sec. and the total valid range is 0-600.
- For the MediaDirector 2202, the default is 40 MB/sec. and the total valid range is 0-600.
- For the MediaDirector 2201, the default is 40 MB/sec. and the total valid range is 1-299.
- For the MediaCenter, the default is 40 MB/sec. and the total valid range is 0-225.
- For the MediaDeck 7000, the default is 40 MB/sec and the total valid range is 0-140.



**IMPORTANT:** For the MediaDeck 7000, Harmonic recommends that you leave the default setting. Changing this setting may affect performance.

For the **MediaDirector 2201**, note the following restrictions when configuring the performance settings:

- The total networking bandwidth, the sum of the Low Priority Bandwidth Limit and the Low + Priority Bandwidth Limit, is limited to 300 MB/s and cannot be increased.
- Neither the Low Priority Bandwidth Limit nor the Low + Priority Bandwidth Limit can be disabled entirely by setting the value to zero. The minimum for both settings is 1 MB/ sec.
- Any values outside the valid range will not be accepted.

For the **MediaCenter** and **MediaDeck 7000**, neither the Low Priority Bandwidth Limit nor the Low + Priority Bandwidth Limit can be disabled entirely by setting the value to zero. The minimum for both settings is 1 MB/ sec.

3. Click **Save Settings** to save the changes.
4. To return to the default settings at any time, click **Return to Factory Defaults**.

## Changing Daemon Settings (for MediaDirectors 2100, 2101, 2102 and 2102B)

This procedure allows you to enable or disable the daemons for the AFP, Samba, and FTP protocols for each host on your Harmonic System. Daemon settings provide a layer of security by allowing you to block access to your file system. These settings can also be used to ensure that a host is used exclusively for real-time functionality and not file transfers.

### To change the Daemon Settings:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click an MediaDirector icon to display the **Physical Configuration** page for the selected MediaDirector.
3. Click the image of the MediaDirector to display the **Properties** page.
4. From the **Host Properties** section, next to **Change Settings**, click the **Daemon Settings** button for the desired host. The **Change MediaDirector Host AFP, Samba, and FTP Daemon enable/disable settings** page appears. All daemons are enabled by default.
5. Click the **Enable** or **Disable** check box for the Daemon Setting you wish to change, and then click **Save**.
6. Reboot the MediaDirector according to the instructions in [Rebooting the Spectrum Video Server](#). In order for Daemon Settings to take effect, the MediaDirector must be rebooted after making any changes.



**NOTE:** Disabling a Daemon Setting may prevent you from accessing or monitoring your file system with an application such as Windows Explorer or Apple Final Cut Pro.

## About IP Flex Mode on a MediaDirector 2102 or 2102B

Starting with Release 4.7 SR3, you can select one or both MediaDirector 2102 or 2102B real time hosts to handle IP traffic.

Keep the following points in mind, if both hosts are to handle IP traffic:

- To avoid running out of disk bandwidth, ensure there is enough bandwidth for the proposed configuration before making any changes. The System will not alert you when you have over-committed bandwidth.
- At this time, support is for FTP only. As only limited testing has been done with the Media API, Omneon MediaGrid FSD, and CIFS, performance is unknown.
- Mixing IP and real time traffic on a single host is not supported.

Refer to [Changing Network/File System Performance Settings \(for MediaDirectors 2100, 2101, 2102 and 2102B\)](#) for instructions on changing or applying bandwidth limits to a MediaDirector.

## Connecting to an Omneon MediaGrid from the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000

Using SystemManager, you can connect the MediaDirector 2252/2251, 2202/2201, MediaCenter, or MediaDeck 7000 to one or multiple Omneon MediaGrid systems.

**To establish communication between the video server and one or more Omneon MediaGrid(s):**

1. Navigate to the **MediaDirector/MediaCenter/MediaDeck Properties** page.
2. Click the **Harmonic MediaGrid Accounts** button to display the **Harmonic MediaGrid Accounts** page as shown in [Figure 9-11](#).

The screenshot shows the 'Harmonic MediaGrid Accounts' page. It consists of three main sections:

- New Account Information:** A form with five fields: ContentDirector (IP address), Username, Password, Domain, and Create Account. There is also a 'Create' button.
- Harmonic MediaGrid Accounts:** A table with columns: ContentDirector, Username, Domain, Status, and Account Actions (Validate, Delete). One row is shown with the values: 10.4.250.229, omneon, Valid, and buttons for Validate and Delete.
- Done:** A button located at the bottom right of the page.

Figure 9-10: Harmonic MediaGrid Accounts page

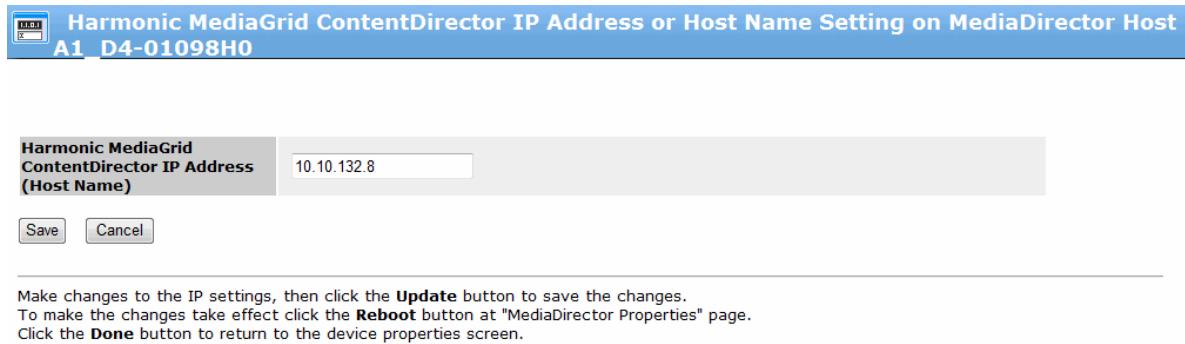
3. In the **New Account Information** section of the page, enter the following information:
  - **ContentDirector:** IP address for the ContentDirector
  - **Username:** Omneon MediaGrid username.
  - **Password:** Omneon MediaGrid password.

- **Domain:** domain of the Omneon MediaGrid
4. Click **Create**. The new account appears in the Omneon MediaGrid Accounts section of the page.
  5. Verify that the Status of the new account shows **Valid**.
  6. To connect to another Omneon MediaGrid, repeat steps 1-5 entering the appropriate information for the second Omneon MediaGrid.
  7. To validate an Omneon MediaGrid account at any time, click **Validate**. The Status of the account will show **Valid** or **Invalid**.
  8. To delete an Omneon MediaGrid account at any time, click **Delete**.

## Connecting to an Omneon MediaGrid (for MediaDirectors 2100, 2101, 2102 and 2102B)

To establish communication between a MediaDirector and an Omneon MediaGrid, or a specific ContentDirector within an Omneon MediaGrid:

1. Navigate to the **MediaDirector Properties** page.
2. To communicate with a specific ContentDirector within an Omneon MediaGrid:
  - a. Click the **Omneon MediaGrid Accounts** button to display the **Omneon MediaGrid ContentDirector IP Address or Host Name Setting** page as shown in [Figure 9-11](#).



**Figure 9-11: Harmonic MediaGrid ContentDirector IP Address or Host Name Setting**

- b. Enter the IP address for the required ContentDirector.
3. To communicate with an Omneon MediaGrid:
  - a. Click **IP Settings** and in the **IP Address Configuration** pull-down menu, select **DNS**.
  - b. From the **MediaDirector Properties** page, click **ContentDirector IP** to display the **Harmonic MediaGrid ContentDirector IP Address or Host Name Setting** as shown in [Figure 9-11](#).
  - c. Enter the DNS name for the Omneon MediaGrid.
  - d. Click **Save** to apply the changes.



**IMPORTANT:** To enable these changes, you must reboot the MediaDirector.

## Changing Logging Variable Settings



**IMPORTANT:** Do not change the settings on this page unless directed by Technical Support.

Logging, or “debug,” variables determine which information is included in the Spectrum log file and enable Technical Support to troubleshoot issues on a Spectrum system. The Change Logging Variable Settings page allows you to specify new information to be added to the Spectrum log file. If you encounter problems with your Spectrum system, Technical Support may ask you to configure this page to help them identify the cause of the issue.

### To change logging variable settings:

1. Navigate to the **MediaDirector Properties** page.
2. From the **Change Settings** section, click **Update Logging variables**. The **Change Logging Variable Settings** page appears (see [Figure 9–12](#)).

Change Logging Variable Settings

Warning: The settings shown here are not actual director settings, please click on the "Query from Host" button to get the director current settings.

Player Debug settings		
player commands	<input checked="" type="checkbox"/>	Currently = OFF
player status	<input type="checkbox"/>	Currently = OFF
cliploading	<input type="checkbox"/>	Currently = OFF

settings for VDCP logging		
vdcp commands	<input type="checkbox"/>	Currently = OFF

**Common Debug Variable**

Select Variable

**Figure 9–12: Change Logging Variable Settings**

3. Click **Query From Host** to query the logging settings from the host. Once the page refreshes, the current host settings will appear.
4. Modify the following logging settings as instructed by Technical Support:

#### Under Player Debug settings:

- **player commands:** Select **On** to log all player activity.
- **player status:** Select **On** to log all queries or responses regarding player status.

- **cliploading:** Select **On** to log all instances of clips being loaded or ejected.

Under **settings for VDCP logging:**

- **vdcp commands:** Select **ON** to log all VDCP commands.
- 5. Click **Send to Host** to send the new settings to the host.
- 6. Click **Query From Host** and verify that the new settings appear.

You may click **Reset** at any time to clear the settings on the SystemManager page and query the settings from the host.

7. If instructed by Technical Support, you may select an option under **Common Debug Variable**. These options may vary. If you are directed to select a variable, Technical Support will provide the value to enter in the corresponding field.
8. Click **Send to Host** to send the new settings to the host.

## About the Domain Name System Setup

The Internet **Domain Name System** (DNS) can be used to allow Spectrum video server hosts to be named consistently across multiple Platforms, from anywhere on the Internet. Having a DNS server is not mandatory for Harmonic devices to function. Any DNS server can be used to provide name service. Note that the SystemManager Platform uses Windows 2000 Professional operating system, and hence cannot be used as a DNS server. You may skip the remainder of this section if you do not plan to use a DNS server.

Adding entries to the DNS database for Spectrum video server hosts allows name-based access to the hosts (as opposed to using IP addresses). In addition, the DHCP server should be configured to give out the address of a DNS server to Spectrum video servers, so that the hosts can name themselves. If the default DNS server is on another IP subnet than the Spectrum video server host, a default route must also be given on the DHCP server.

DNS names are case insensitive on look-up of addresses *from* names, but they preserve upper and lowercase on lookup of addresses *to* names. For example:

- If the name “SportsServer” is assigned IP address 1.2.3.4, “SPORTSSERVER” and “sportsserver” will also map to 1.2.3.4.
- If 1.2.3.4 is mapped to a name, SportsServer is returned.

Multiple names can be assigned to the same address, for example, for logical names. For best results, keep the names (up to the first dot) under 15 characters in length, and use only letters and digits — so that they match the NetBIOS names described below. Using descriptive names that match physical labels on the Spectrum video servers themselves is a good policy.

## Adding a New Spectrum Video Server

**To set up a new Spectrum video server on a TCP/IP network:**

1. If you have a DNS server, create a name for the Spectrum video server in the DNS server. Create DNS entries in both directions, “A” records and “PTR” records. The “A” record maps a host name to an IP address in a DNS zone. Its counterpart (the **PTR** resource record) is used to map an IP address to a host name in a DNS reverse lookup.
2. Add the address (as assigned in step 1) to the DHCP server (**vDHCP**).
3. Connect the single MediaDirector 2100 host or multiple hosts from the MediaDirector 2101, 2102, 2102B to a network with a vDHCP server.

Refer to “Connecting the SystemManager, MediaDirector, and Ethernet” in the **Spectrum System Getting Started Guide**.

4. When power is applied, each Spectrum video server host attempts to obtain an IP address from the DCHP server. If it does not succeed, the Ethernet LED or LEDs (for one or both hosts) on the Spectrum video server’s front panel flash. The hosts continue to look for a DCHP server until they are successful, as indicated by the LED(s) in a steady **ON** condition.

Refer to **MediaDirector Orientation** in the *Omneon Spectrum System Hardware Orientation Guide* as required for a complete description of all front panel LED assignments.



**NOTE:** A default route is also requested from the vDHCP server. This route is required if clients from more than the local network will access the server.

5. Once a host has an IP address, it attempts to get a name from the DNS server that corresponds to its IP address, using the “**PTR**” record added in step 1 above.
6. If there is no DNS server present, or if there is no entry for the host, the host will assign a name for itself (i.e. D2\_01037H0) as follows:
  - The default MediaDirector 2100 name is D3\_nnnnnH0, where:
    - The first 5 n’s are the MediaDirector’s 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
    - H = Host
  - The default MediaDirector 2101 name is D2\_nnnnnHn, where:
    - The first 5 n’s are the MediaDirector’s 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
    - Hn = Host 0 or 1
  - The default MediaDirector 2102 or 2102B name is D4\_nnnnnHm, where:
    - The first 5 n’s are the MediaDirector’s 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
    - Hm = Host 0-3
  - The default name for the Omneon MediaDeck is **D7\_nnnnnHn**, where:
    - The first 5 n’s are the MediaDeck’s 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
    - Hn = Host 0 or 1
  - The default name for the MediaDirector 2202 or 2201 is **D8\_nnnnn**, where:
    - The first 5 n’s are the MediaDirector’s 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
  - The default name for the MediaCenter is **D9\_nnnnn**, where:
    - The first 5 n’s are the MediaCenter’s 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
  - The default name for the MediaDeck 7000 is **D11\_nnnnn**, where:
    - The first 5 n’s are the MediaDeck’s 5-digit unit ID, which electronically identifies the unit. This ID is coded at the factory.
7. Browse the SystemManager to verify that each configured Spectrum video server hosts were discovered – and that they have the right addresses and names.
8. (This step is optional.) To make the names permanent (if desired), do the following:
  - a. Launch the SystemManager application.

- b. Navigate to the **MediaDirector/MediaCenter Properties** page for each host, click the **Name** button, and enter the assigned name in the **Name Field**.
- c. Click the **Save** button.

If the DNS names were not found on the first try (step 7), reboot the Spectrum video server again.

9. Use the vDHCP manager to mark the IP addresses that were assigned to the host Ethernet addresses as permanent.

Refer to [Setting IP Addresses through vDHCP](#) for information on assigning permanent addresses.

## About NetBIOS Naming

In addition to the standard Internet Domain Name System, the NetBIOS system is also used on Windows platforms. Instead of being centrally administered, each device (such as a PC or a Spectrum video server) names itself and broadcasts “**advertisements**.” A *master browser* on each subnet picks up these broadcasts automatically, to allow individual Windows users to see who is on the local subnet. In a small installation, this mechanism may be sufficient, thus avoiding the DNS set up. For best results, keep both names consistent (DNS and NetBIOS).



**NOTE:** When users assign a NetBIOS name to a host from the SystemManager, it should be unique on the network. This not only applies to the Spectrum video server host, but also to a Windows PC or any other device that advertises its NetBIOS name. Refer to [About Device Name Limitations](#) for additional information.

When Spectrum users talk about “seeing” a Spectrum video server, they are usually talking about browsing into it from a client. Please note the following important points:

- For mapping names to addresses, both DNS and NetBIOS are case insensitive. However, while DNS preserves the upper/lower case in the name, NetBIOS converts the name to all upper case.
- The name as seen in a Windows browser shows the first character upper case, and the remainder lowercase; the actual NetBIOS representation is all upper case.
- Although NetBIOS allows some other special characters in its names, using only letters and numbers is compatible with DNS. NetBIOS names are limited to 15 characters.
- The name displayed by the SystemManager is the NetBIOS name. Changing the Spectrum video server’s name within the SystemManager only changes its NetBIOS name.
- Remember that the MediaDirectors 2101, 2102, and 2102B have multiple hosts, all of which may be browsed independently from a client. However, the hosts will display the same file information.

## About Device Name Limitations

For a list of limitations for naming devices, Players, RAID sets and File Systems, refer to [About Naming Files and System Elements](#).

## About Spectrum Video Server Network Services

The following TCP/IP services are implemented on the Spectrum video server:

- Network file access using the CIFS protocol as described in the next section.

- File Transfer Protocol (FTP). Many platforms (Microsoft Windows and others) include both command line FTP programs, and browsers that take URLs of the form `ftp://MediaDirector Name/fs0`.
- Monitoring and management. Private messages are sent from each Spectrum video server to the SystemManager.
- Network file access using the AFP (Apple File Sharing) protocol. This allows Macintosh computers to access media on a Spectrum video server.
- Spectrum Player Control Protocol. Messages are sent from each control application, such as the ClipTool — to and from the Spectrum video server being controlled.



**NOTE:** The services listed above are available from any MediaDirector 2100 host or multiple MediaDirector 2101, 2102, or 2102B hosts. The first four services provide the same information regardless of which host is used. The "Player Control Protocol" service provides information that pertains only to Players configured on the individual host.

## About the File Server Setup

The Omneon Spectrum video server provides file server functionality similar to that of Microsoft Windows NT or Windows 2000. The protocol by which such servers and clients exchange information is called the **Common Internet File System** (CIFS), but it is better known by its historical name, **Server Message Block** (SMB). CIFS is also referred to as **Samba** on UNIX systems that include a software suite that implements the SMB protocol.

The Spectrum video server's CIFS file server allows Windows, Macintosh, and Linux clients to access media on the Spectrum video server's file system in much the same way as they would access files on a standard Windows server. This allows customers to use many of the powerful software packages available for video production and media management, using industry standard computer platforms — in conjunction with content recorded on Harmonic products.

Note the following important points regarding MediaDirector 2101, 2102, and 2102B hosts:

- All hosts provide the same identical view of the MediaDirector's file system information.
- Each host runs a separate CIFS server, and each host's CIFS setup is configured individually.

## Changing the WorkGroup Setting (for MediaDirectors 2100, 2101, 2102 and 2102B)

Using the SystemManager, an administrator can change the network setting for the **Workgroup**. In the default configuration mode, the CIFS server is configured to use its DNS name as NetBIOS name, and "**WORKGROUP**" as its workgroup.

### To edit the WorkGroup setting for MediaDirectors:

1. Start the SystemManager application.
2. Click the **Configuration** tab to display the **Configuration** page.
3. In the System diagram, click a "single" MediaDirector host icon (not the dual host icon) to display the **MediaDirector Physical Configuration** page.
4. Click the MediaDirector's picture to display the **MediaDirector Properties** page.
5. From the **Change Settings** field, click the **Workgroup** button to display the **Change MediaDirector Workgroup** page ([Figure 9-13](#)).



Figure 9–13: Change MediaDirector Workgroup

6. Edit as follows:

- **WorkGroup:** A workgroup is defined as a group of users who work on a common project and share information on computers that are interconnected, often over a local area network (LAN). The “WorkGroup” text box indicates the current workgroup setting for this MediaDirector host only. The factory default is “WORKGROUP.” A user may enter text in the box in order to define a new or different workgroup name.
- 7. Click **Save** to save any changes made to the **Workgroup** setting.

**NOTE:** In order for the changes to take effect, you must reboot the MediaDirector.

## About Client Setup

Note the following important points regarding client setup:

- Microsoft Windows clients (Windows 95, 98, ME, NT 4.0, 2000, and XP) need no additional software to access a Spectrum video server.
- Macintosh OS 9 and earlier clients require a third-party software program such as DAVE, from Thursby Software Systems, Inc. to support SMB mounted file systems. DAVE is available for purchasing and downloading at <http://www.thursby.com/products/dave.htm>.
  - You should install DAVE on your Macintosh before proceeding.
  - Another approach is to use a PC emulator package, such as Virtual PC from: <http://www.microsoft.com/windowsxp/virtualpc/>
  - Macintosh OS X clients need no additional software to access a Spectrum video server.

**NOTE:** Macintosh clients may also access Spectrum video servers using the AFP protocol, in addition to CIFS.

- If you are mounting a Spectrum video server to a Linux client, Omneon recommends that you use the “mount -t cifs” command and not the “mount -t smbfs” command.

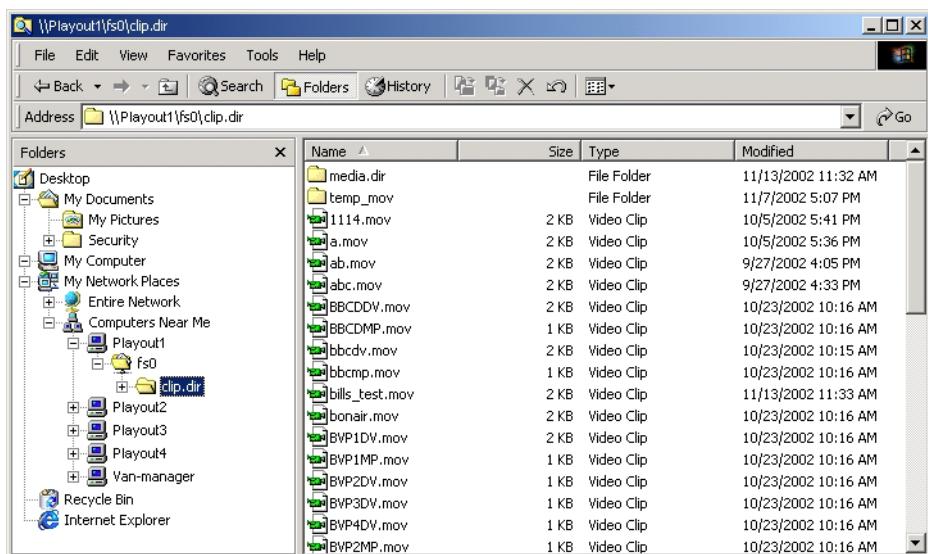
Client platform-specific instructions are provided for accessing the Spectrum video server file system from both Windows and Macintosh OSX based computers. For specific help on the OS 9 Macintosh user interface, refer to the documentation and help provided by the vendor of the **DAVE** application. The instructions beyond accessing files in the following sections are specific to Windows clients, although the concepts are the same for Macintosh clients.

Clients should be configured to use a naming protocol (DNS or NetBIOS) that has been set up as described in this chapter. This is another reason to keep DNS and NetBIOS names consistent — clients are more likely to work no matter how they are setup.

## Browsing the Spectrum Video Server File System from a Client

To browse the file system from a client connected to a Spectrum video server:

1. Open the “Network Neighborhood” window (Windows NT, Windows 9x) or the “My Network Places” window (Windows 2000, XP).
2. Inside, click **Entire Network > Microsoft Windows Network > Workgroup**. You will find an icon for each Spectrum video server host on your subnet. If the Spectrum video server hosts do not appear, enter the **\MediaDirector Host Name** or **\IPAddress** in the address bar.
3. Double-click the host icon to display a folder (share) typically called “**fs0**.” This name corresponds to the Spectrum video server’s File System name. There will be a share for each File System on the Spectrum video server. For an EFS (Extended File Sharing), a file system could be visible and accessible from all the MediaDirectors sharing the file system.
4. Double-click on the share to view the file system and folders as desired. [Figure 9-14](#) illustrates a sample system that includes multiple MediaDirectors.



**Figure 9-14: MediaDirector File System in Client Window**

5. The properties of a folder or an individual file can be viewed by right-clicking on the corresponding icon.

[Figure 9-15](#) illustrates a sample **Properties** dialog for a .mov file. Only “**Created**” and “**Modified**” times are stored on a MediaDirector. The time given as “**Accessed**” is really the “**Modified**” time. Security attributes on files are not supported in the current release.

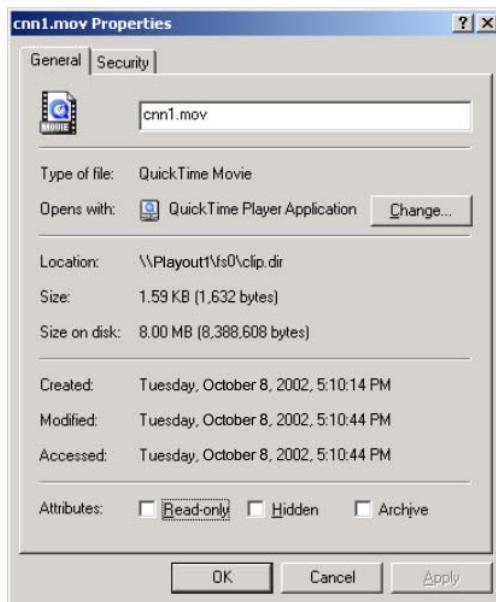


Figure 9–15: Properties Dialog

Note that the properties of the entire file system are not visible until the file system is mapped to a drive. Refer to [Mapping a Spectrum Video Server File System to a Windows Network Drive](#) for more information.

## Mapping a Spectrum Video Server File System to a Windows Network Drive

Many applications require the Spectrum video server's file system to be mapped to a network drive.

### To map a Spectrum video server's file system to a network drive:

1. Right-click on the **fs0** icon (or the File System name icon) and select "Map Network Drive".
2. The newly created network drive should be visible in Explorer. In [Figure 9–16](#), **fs0** on **Playout1** is mapped to the client's **E:** drive.

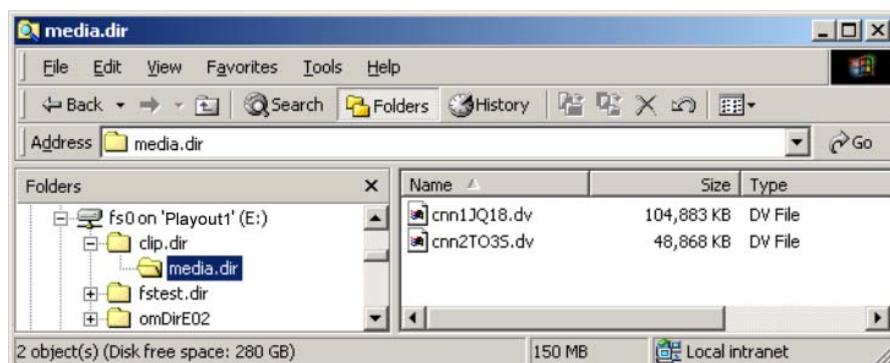


Figure 9–16: Mapping File System to Network Drive

3. The file system's properties are available by right clicking on the network drive icon, as shown in *Figure 9-17*.

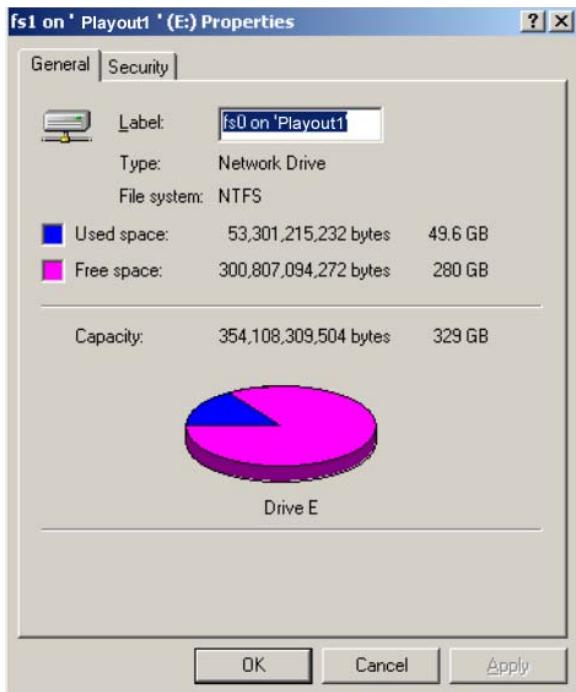


Figure 9-17: File System Properties

Note that the **File System** field reads **NTFS**, even though this is **not** an NTFS file system, but a Spectrum video server file system.

The Spectrum video server file system does not have the restrictions of a FAT file system – names can be up to 255 characters and files can be many Gigabytes long. The amount of free and used space is not perfectly accurate, but it can be used as a guide. If multiple MediaDirectors share a file system across their Fibre Channels, the file system appears under each MediaDirector with the same files in each one.

If the MediaDirector's or MediaCenter's file system is mapped as a network drive on a PC and the Spectrum video server is rebooted, the following popup error message may appear:

"An error occurred while reconnecting <drive letter>: to <File System name>Microsoft Windows Network: The local device name is already in use. This connection has not been restored." and "Cannot copy <filename>: The specified network name is no longer available."

To resolve this problem, click OK, then click on the file system icon on Windows Explorer. The red "x" on the file system icon will disappear after some seconds.

## Connecting a Macintosh to the Spectrum Server using SMB

Browsing or using Harmonic files on Macintosh OS X systems require the Spectrum video server's file system to be mounted.

### To mount the Spectrum server using SMB:

1. Click on the Finder **Go** pull-down menu and select the **Connect to Server** item, a dialog appears.

2. If the NETBIOS name server is found by the operating system, the host names will appear in the top pop-up menu ([Figure 9–18](#))— if so, select the desired host and click **Connect**.

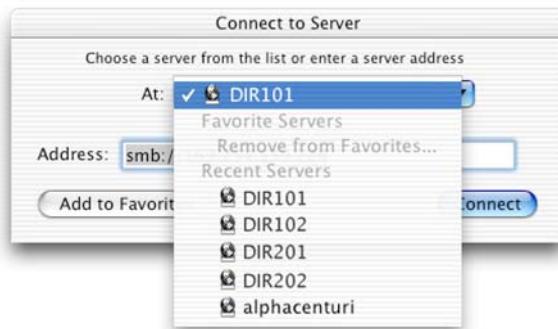


Figure 9–18: Connect to Server Host Names Menu

3. If the desired host name does not appear in the pop-up, type in the IP address of the desired host preceded by "smb://" ([Figure 9–19](#)) and then click **Connect**.



Figure 9–19: Selected Host Name in the Connect to Server Dialog

4. Once the operating system has located the desired server on the network, provide an appropriate user name and password and click on **OK**.
5. Upon successfully entering a username and password, the **SMB Mount** dialog is displayed ([Figure 9–20](#)). Select a folder from the pop-up menu, typically called "fs0" and click **OK**. As in Windows, this name corresponds to the Spectrum video server's File System name.

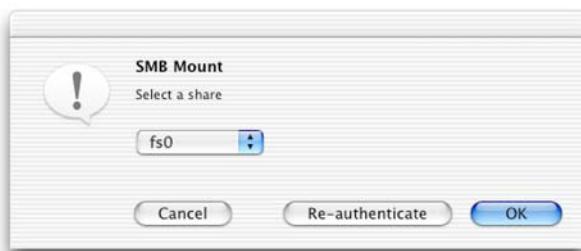


Figure 9–20: SMB Mount Dialog Box

## Playing Media Files from a Spectrum Video Server on a Client PC

### To play media files from a Spectrum video server on a Client PC:

1. Install an application on the client that supports the file format you intend to play. For example, clip files with the **.mov** extension (and containing DV media) and media files with a **.dv** extension may be played with **QuickTime™** version 5.0 or later. To download and install QuickTime™, go to <http://www.apple.com/quicktime/download>.

Microsoft Windows Media Player is initially associated with .mov files, but since it only supports older variants of the QuickTime format, Windows Media Player will not play .mov files recorded on a Spectrum video server.

As shown in *Figure 9–21*, after QuickTime is installed, the icons representing DV files refresh to show that there is now an application associated with these files.

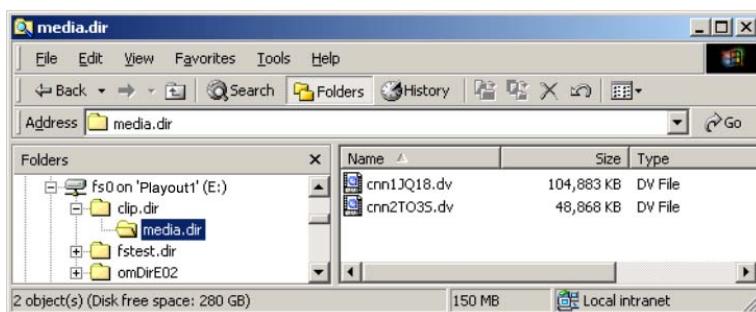


Figure 9–21: Media.dir Window

2. Double-click the file that you wish to play. This starts the execution of QuickTime.
3. Clicking the Play button in the QuickTime window plays the media file.



**NOTE:** Current CIFS File Server performance supports playing DV streams in real-time directly from the Spectrum video server, but the QuickTime player itself is not tolerant of network latency, so video frames may be skipped.

## Copying Files from a Spectrum Video Server to a Client PC

### To copy files from a Spectrum video server to a Client PC:

1. Using Windows Explorer, find the file on the Spectrum video server that you wish to transfer.
2. Drag that file's icon from its location on the Spectrum video server, and drop it on the icon of the desired destination folder. For example (*Figure 9–22*), file **cnn1JQQ18.dv** has been copied to a folder named “Clips on My Computer” on local *disk C*.

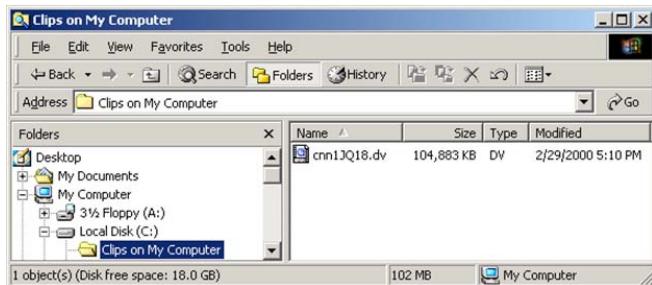


Figure 9-22: Clips on My Computer Window

- To play the file, double-click its icon, and then click the Play button in the QuickTime window. Other Windows mechanisms for file transfer and linkage (cut, paste, copy, and shortcuts) may also be used.



**NOTE:** When copying a file using SMB to or from a Windows PC, the windows progress dialog box incorrectly calculates time remaining to copy, first showing a reasonable and increasing value, and then showing a very large value for a considerable time. The copy eventually succeeds, despite the errant time remaining indication. This problem appears to be a Windows problem since it is reproducible when copying a 5GB file between two Windows 2000 PCs.

## Copying Files from a Client PC to a Spectrum Video Server

### To copy files from a client PC to a Spectrum video server:

- Find the file that you wish to transfer.
- Drag the icon from its location on local disk, and drop it at the desired Spectrum video server location. You can use other Windows mechanisms for file transfer and linkage (cut, paste, copy, and shortcuts).

Note that under certain conditions, you may experience poor throughput when copying a file from a Windows 7 client PC to a legacy Spectrum system (MediaDirectors 2100, 2101, 2102 or 2102B) using CIFS/Samba. The following work-arounds may help alleviate this issue.

- If possible, use FTP instead of CIFS for transferring large files.
- You may experience slow transfers when overwriting an existing file. In this situation, it may be better to delete the previous version of the file, and then copy in the new version.
- You may experience slow transfers when transferring a file into the root directory of the Spectrum file system. In this situation, it may be better to transfer the file into a temporary directory, and then once the transfer is complete, move the file to its final location.

## About File Types

Choose from the following topics:

- [\*About File Types used on a Spectrum Video Server\*](#)
- [\*About Support for MXF eVTR\*](#)
- [\*About Spectrum Video Server Striping for Files Transferred over Ethernet\*](#)
- [\*About File Handling for Final Cut Pro\*](#)
- [\*Editing the Filetypes.conf File\*](#)

- [\*About Changing the Ethernet File Striping Behavior\*](#)
- [\*Mapping Suffixes for File Types\*](#)
- [\*About File Sharing Cautions and Limitations\*](#)
- [\*About Source Code Availability\*](#)
- [\*About Naming Files and System Elements\*](#)

## About File Types used on a Spectrum Video Server

Clips recorded by Spectrum video server “Players” are (by default) stored in a folder called clip.dir with the clip files (or “headers”) having the .mov (QuickTime movie) type. The corresponding media files are stored in clip.dir/media.dir. When copying (or creating) media files from a PC to a Spectrum video server, it is important to have the correct file extensions. The Spectrum video server uses known file extensions to determine how to store files efficiently for playback. [\*Table 9-1\*](#) lists the file extensions recognized by the Spectrum video server with the corresponding file types. These files are handled “in a special manner” by the Spectrum video server.

**Table 9-1: File Extensions Supported by Spectrum video servers**

Extensions	Corresponding File Types
.mov	Clips that can be loaded into Players
.dv	Digital Video media file
.601	10-bit SDI media file
.aiff	Audio Interchange File Format media file
.hdcam	Sony HDCAM media file
.vbi	Vertical Blanking Interval media file
.mpg	MPEG-2 elementary stream file (includes MXF files)
.mpeg	Alternate MPEG formats
.au, .aud, .aif, .wav	Alternate audio formats
.avi	Audio Video Interleaved
.rm	Real Media Format
.wmv, .wma, .ASF	Windows Media File Formats
.dif	Alternate Digital Video file format (Pinnacle purple.)
.data	Data file, typically containing DVB/ASI transport streams

Review the following important points regarding the listed file formats:

- Only .mov files referenced in [\*Table 9-2\*](#) can be played successfully by the Spectrum video server.

**Table 9-2: File Types Referencing .mov Files Supported by Spectrum video servers**

.dv	.mpg	.vbi
-----	------	------

.aiff	.data	.wav
.601	.hdcam	.dif

Of these file types, the only ones that can typically be generated (or read) by a PC or Macintosh are DV 25 (stored in .dv files), .aiff and .wav. While some of these other extensions may be used for media files on the PC or Macintosh, in general their codecs are not compatible with Harmonic codecs.

- Files with media types not listed in the table can still be copied to the Spectrum video server (using CIFS, AFP or FTP). They will however be stored in a format optimized for small files, and cannot be played back through MediaPorts.



**NOTE:** No locking or security functions are performed in the current release.

## About Supportfor MXF eVTR



**NOTE:** Spectrum supports many variations of MXF. For detailed information about supported track and wrapper formats, refer to Spectrum Media and Wrapper Formats included in the Spectrum documentation suite.

Following are notes about the implementation of MXF eVTR for Spectrum:

- MXF eVTR currently supports IMX 30, 40 and 50 4:2:2 accompanied by 8 channels of 24-bit AES3 audio. Note that the SystemManager application will allow you to create an IMX 30, 40, and 50-only recorder (i.e. without audio), but you will not be able to record with a video only Player. Be sure to specify IMX 30, 40, or 50 and 8 channels of 24-bit AES3 audio for MXF eVTR recorders.
- MXF eVTR clips recorded on a Spectrum System and transferred to an eVTR will lose structural and descriptive metadata not recognized by the E-VTR. Examples of lost metadata include default in and out points, language labels for audio tracks, and other descriptive tags set with the Player API. This is not an issue unless you plan on transferring the clip back to the Spectrum System.
- MXF eVTR clips recorded on a Spectrum System and transferred to an eVTR will have all dark metadata quietly dropped by the eVTR. This is not an issue unless you plan on transferring the clip back to the Spectrum System since the dark metadata is not preserved by the eVTR.
- MXF eVTR and QuickTime clip names are distinguished by extension (.mxv vs. .mov), however, applications that access clips using the Player API, or VDCP protocol cannot see these extensions. Therefore, mixing clips of the same name but different extensions (e.g.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 eVTR files, you should change all Players to MXF eVTR including playback Players. MXF eVTR playback Players allow the playback of both MXF eVTR and QuickTime audio.
- Windows ClipTool version 3.1 and later versions support MXF eVTR. Previous versions of this application do not recognize MXF eVTR.
- When using the MXF eVTR format, you must configure a video and an audio track.
- The current implementation of MXF eVTR does not support HD output

Refer to Spectrum Media and Wrapper Formats included in the Spectrum documentation suite for detailed information about supported track and media wrapper formats.

## About Spectrum Video Server Striping for Files Transferred over Ethernet

Spectrum uses different file striping schemes for performance reasons. Many files, including “.mov” files, are recorded as “nostripe” files to save space, but nostripe files cannot contain media for real time playback. The Spectrum server records video files as “largestripe” and audio files as “smallstripe”, based on the file extension (.dv, .aif, .601, etc.) assigned internally by the Spectrum video server’s recording software. Please note:

- Nostripe files are files that are stored compactly on disk, but are not intended to contain real time media. The File System cannot retrieve these files quickly enough for real time playback purposes. On the Harmonic system, most .mov files and any other files that do not contain any actual media fall into this category.
- Smallstripe files are those that contain media of relatively low bit rates, for real-time playout. They use a larger block size on disk and consume a medium amount of Spectrum video server resources. On the Harmonic system, .aiff and .wav audio files fall into this “smallstripe” category.
- Largestripe files are those that contain high bit rate real-time media. They use the largest block size on disk and consume a large amount of Spectrum video server resources. On the Harmonic system, all video files (including .dv, .601, .mpg, etc.) fall into this “largestripe” category.

All of these striping schemes are applied automatically when files are recorded by the Spectrum video server through MediaPorts. When files are recorded using Ethernet, however, these rules do not automatically apply. Instead, rules specified in a special file called “filetypes.conf” are used. This file is setup by default to handle files saved by Apple® Final Cut Pro®, and to handle standard Harmonic media file types. To add new rules for file type handling as required, the user may edit the filetypes.conf file.



**NOTE:** Remember that a MediaDirector 2100 has a single host and MediaDirectors 2101, 2102, and 2102B have multiple hosts. Each host in turn has its own filetypes.conf file.

---



**CAUTION:** Only qualified support personnel should change the Spectrum video server striping method.

---

Refer to [Editing the Filetypes.conf File](#) for instructions.

## About File Handling for Final Cut Pro

Files recorded by Apple Final Cut Pro (FCP) do not follow Harmonic’s file naming schemes, so the server has to be given special rules in order to write FCP’s output such that edited clips will play out correctly using MediaPorts. These special rules are required because most FCP files often contain real-time media.

Harmonic ships Spectrum video servers preconfigured with the following rules (pertaining to FCP):

- Anything saved in or below an “FCP” directory and ending with “.mov” will be recorded as largestripe. Harmonic recommends that the FCP user create an “FCP” directory on the Spectrum video server under the appropriate host. Use this directory to store FCP’s files.

- Anything recorded in or below the “Render Files” or “Capture Scratch” directories will be largestripe. These directories are automatically created by FCP (on the Spectrum video server).
- Anything recorded in or below the “Audio Render Files” or “Audio Capture Scratch” directories will be smallstripe. These directories are also automatically created by FCP (on the Spectrum video server).

These rules should suffice for most FCP users as long as all Final Cut Pro movies are exported to the “FCP” directory on the Spectrum File System with the “.mov” extension. For the files to be playable by the Spectrum video server, they must end with “.mov” in order to appear as Harmonic clips.

## Editing the **filetypes.conf** File

The Edit “filetypes.conf” File page allows qualified users to modify the “filetypes.conf” file for the associated Spectrum video server host. This file specifies the rules by which striping schemes are applied to all media files recorded over Ethernet. Harmonic uses three different file striping schemes for performance reasons: Nostripe, Smallstripe and Largestripe.

For applications that recognize different file suffixes for the same file type, you can edit “filetypes.conf” so that one file suffix is mapped to another. Refer to [Mapping Suffixes for File Types](#) for more information. The filetypes.conf file can be edited with a simple text editor or from the SystemManager application.

### To edit the **filetypes.conf** file:

1. Start the SystemManager application.
2. Click the **Configuration** tab to display the **Configuration** page.
3. In the **System** diagram, click a Spectrum video server host icon to display the **Physical Configuration** page.
4. Click the Spectrum video server’s picture to display the Properties page.
5. Click on the **Edit “filetypes.conf”** button that appears below each host’s **Unique Properties**. This takes you to the **Edit “filetypes.conf”** page as shown in [Figure 9–23](#).

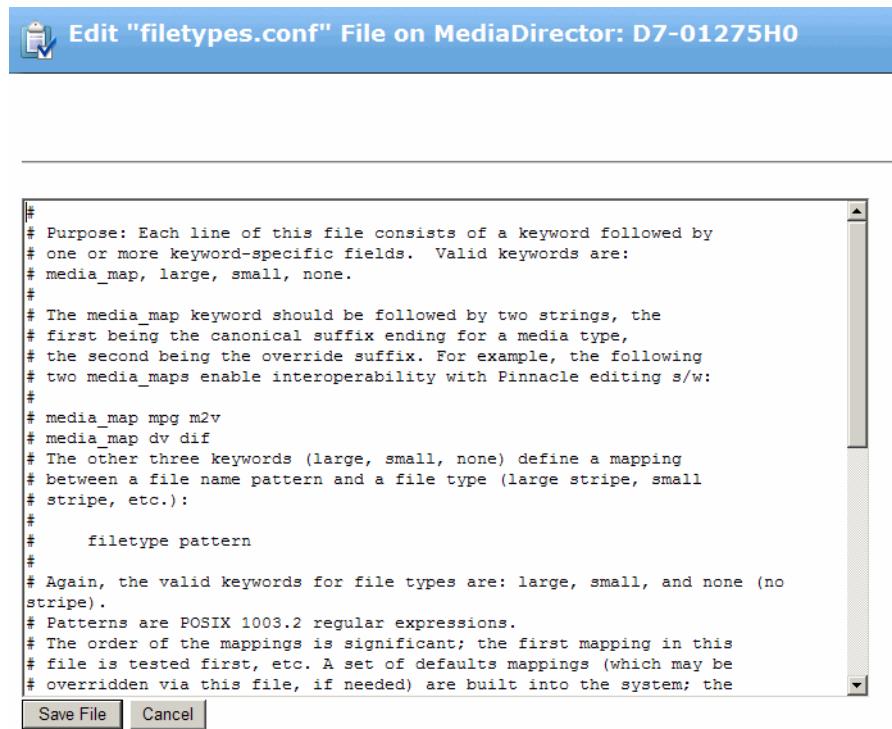


Figure 9–23: Editing the Filetypes.conf File

6. Edit the file following the rules and recommendations discussed in [About Changing the Ethernet File Striping Behavior](#).

## About Changing the Ethernet File Striping Behavior

The filetypes.conf file can be edited in order to change the striping behavior. The file is plain text and contains rules using “regular expressions” compliant with POSIX 1003.2 (aka Unix egrep, etc.) except that the expressions are case-insensitive.

Note the following usage in POSIX expressions:

- (#) Lines beginning with a pound sign are comments and will not be processed.
- (.) matches any single character.
- (\*) Indicates that the preceding item will be matched zero or more times.
- (+) Indicates that the preceding item will be matched one or more times.
- (\*) Acts as a wildcard. It matches all characters.
- (\$) Means match the string at the end of the line. For example, “mov\$” matches strings that end with “.mov”.
- Regarding ([ ]) square brackets:
  - A pair of square brackets matches a selection of characters specified within the square brackets. For example, [Hh]ello matches lines containing “Hello” and “hello”. And [.] matches a line containing a dot.
  - The square brackets can be used to search for non-matches. This is done by putting a carat (^) as the first character inside the square brackets. So, if the list within([ ])

begins with a carat (^), it matches any single character not from the list. For example, clip[^123456789]+ matches clipA, clipQ, and clipz, but not clip0, clip5, and clip8.

- |() A vertical line is used to separate alternatives. For example, dv|dif|m2v matches “dv”, or “dif”, or “m2v”.
- A pair of parentheses () or round brackets is required to enclose sub expressions. For example, dv|dif|m2v must be enclosed within a pair of parenthesis in order to be a valid sub expression as in (dv|dif) m2v)

Make changes as desired using standard editing procedures. When changes are completed, click on Save File to preserve your edits or Cancel to abort changes.



**CAUTION:** If these instructions are beyond your capabilities, do not attempt to edit the filetypes.conf file. Only qualified support personnel should change the Spectrum video server striping method.

The default rules assume that you will create a directory named FCP on the Spectrum File System and use that directory for all FCP output. Other directory names can be used for FCP output, but the filetypes.conf must be edited accordingly. For example, if FCP movies will be exported directly to the default clip.dir directory for use by automation applications, you will want to add the following rule into the filetypes.conf files:

```
large      /clip[.]dir/.*[.]mov$
```

This is performed so that all .mov files written using Ethernet into the clip.dir directory will be recorded as largestripe. You would put this new rule just before or after the line:

```
large      /FCP/.*[.]mov$
```

or, you would replace this old rule with the new one if you do not want to use an “FCP” directory at all.

Note that Final Cut Pro will create some or all of the following subdirectories in any directory that it is told to use for a “scratch disk”:

- Audio Render Files
- Capture Scratch
- Render Files
- Audio Capture Scratch

The default rules account for these subdirectories automatically. All you have to change (if you want to change anything) is the directory or directories within which Harmonic will enforce the “record .mov as largestripe” rule.



**NOTE:** The rules in filetypes.conf only apply to files written by external applications like Final Cut Pro. Files recorded using MediaPorts are always written with the correct striping regardless of the rules in the file, so you will not “break” the server’s basic operations by changing the file.

Refer to [Mapping Suffixes for File Types](#) for information regarding alternate file suffixes for the same file type.

## Mapping Suffixes for File Types

Some third party applications recognize different file suffixes for the same file type. For example, one application may recognize .dif as a valid suffix for the DV file format and not .dv. To ensure compatibility, add an expression to the “filetypes.conf” file to map one file suffix to another.

**To map file suffixes:**

- From the Edit “filetypes.conf” page, in the scrolling text box, enter the following expression: “media\_map suffix1 suffix2” (Where suffix1 stands for the suffix you want to replace and suffix2 is the replacement.)

*Table 9–3* lists the suffixes which can be substituted for each supported file type with multiple suffix options.

**Table 9–3: Mapping Suffixes for File Types**

File Type	Recognized Suffixes
DV	.dv
	.dif
AIFF	.aiff
	.aifc
	aif
WAVE	.wav
	.wave
MPEG 2	.m2v
	.mpg

- Click Save File to preserve your edits or Cancel to abort changes.

All new recordings now generate a file with the new suffix (suffix2) as specified above.

## About File Sharing Cautions and Limitations

Note the following important file sharing cautions and limitations:

- 255 characters is the maximum length for file names (for files created through the SMB interface). The maximum length for path names (as supported by the Spectrum video server) including the file name and all directories is 4095 characters. However, Windows clients generally do not allow path lengths greater than 255 characters.
- File creation and modification times for files and directories are maintained, but not always exactly in the same way as Windows NT servers. That is, if you copy a file from a client to the Spectrum video server, the modification time is reset to the time that the file copy was completed (instead of the modification time on the original file).
- Access time information is not supported.
- Per-file and per-directory permissions are not supported in the Spectrum video server release. The SMB File Server allows complete access to all users. Please ignore information or controls in the “Security” tabs of all “Properties” dialogs.
- All locking operations are allowed without checking for the existence of multiple users. This improves performance, but means that applications that depend on file locking for coordination should not be used.
- The Spectrum video server cannot be used as a Network Print Server, LDAP server, Master Browser (Local or Domain) or WINS server.

## About Source Code Availability

The Harmonic CIFS Server is based on Samba, which is open source software with a GNU General Public License. Per the terms of this license Harmonic provides the Samba source code, including Harmonic modifications that make it work with the Harmonic Server System. Please contact Harmonic for details regarding the Samba source code, or visit the Samba web site at <http://www.samba.org>.

The Harmonic AFP Server is based on Netatalk which is open source software with a GNU General Public License. Per the terms of this license Harmonic provides the Netatalk source code, including Harmonic modifications that make it work with the Harmonic Server System. Please contact Harmonic for details regarding the Netatalk source code, or visit the Netatalk web site at <http://netatalk.sourceforge.net>.

## About Naming Files and System Elements

*Table 9–4* provides important notes about the naming of files, devices, hosts, Players, RAID sets, and File Systems on a Harmonic network.

**Table 9–4:** File Naming Conventions and Elements

Element	Notes
Filename Clip Name	Naming conventions follow Windows32™ rules. In general, names can be quite long. Standard alphanumerics are allowed: a-z, A-Z, 0-9. Most characters, including spaces, are valid except: / \ : * ? < >   and the double quote character (").
Device Name Host Name	Maximum name length is <i>fifteen</i> characters. Standard alphanumerics are allowed: a-z, A-Z, 0-9 also _ (underscore) and -(dash). 9 special characters are allowed for Device or Host names: ! ^ ( ) { } - _ ~ No spaces are allowed.
Player Name RAID Set Name	Maximum name length is <i>thirty</i> characters. Standard alphanumerics are allowed: a-z, A-Z, 0-9 also _ (underscore) and -(dash). 9 special characters are allowed for Player or RAID Set Names: ! ^ ( ) { } - _ ~ No spaces are allowed.
File System Name	Maximum name length is <i>eight</i> characters. Standard alphanumerics are allowed: a-z, A-Z, 0-9 also _ (underscore) and -(dash). 9 special characters are allowed: ! ^ ( ) { } - _ ~ No spaces are allowed.

Keep in mind the following additional points:

- For a Harmonic system with an Omnibus automation system, clip names are usually generated on the Omnibus side. To create clips for use on an Omnibus system, follow these guidelines:

- ❑ Avoid creating long Harmonic clip names that only differ in the last few characters as long Harmonic clip names are truncated to 25 characters when Omnibus clip names are generated.
  - ❑ Avoid creating clipnames that differ only in upperCase/lowerCase iteration. Omnibus preserves the case of clip names but internally uses case insensitive searching.
- When using AFP, the maximum file name length should be 26 characters.
- Clips with file names longer than 26 characters cannot be imported into Final Cut Pro There is a known incompatibility issue with long file names between Final Cut Pro and OSX.

# Chapter 10

## Video Server Services Configuration

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This chapter provides instructions for configuring the Playout Channel on a Spectrum video server and the services provided by the Playout Channel including Onboard Playout Control, Media Fetch and Traffic and Billing. This section includes:

- [About Onboard Playout Control](#)
- [About Playout Channels](#)
- [Configuring a Playout Channel](#)
- [Enabling the Traffic and Billing Service](#)
- [Configuring the Media Fetch Service](#)

### About Onboard Playout Control

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

OPC consists of software present on a Spectrum system plus a tool for monitoring channels, called PlayoutTool (refer to the *Spectrum Onboard Playout Control and PlayoutTool User Guide* for more information). A Spectrum system that is licensed for OPC can use the Traffic and Billing service and, optionally, the Media Fetch service as well.

- For an overview of ChannelPort configuration steps for OPC, refer to [Configuring a ChannelPort Channel for Onboard Playout Control](#).
- For an overview of MediaPort configuration steps for OPC, refer to [Configuring a MediaPort Channel for Onboard Playout Control](#).

Note that in order to use OPC to control a player, you must first configure that player to use "Harmonic Playout" for control. For instructions, refer to [Initial Player Configuration](#).

### About Playout Channels

A Playout Channel is a process that runs on a Spectrum video server, which provides control for players and graphics, allowing you to preview graphics with the ChannelPort PreviewTool as well as control a player attached to a ChannelPort or MediaPort. When you use PreviewTool to preview graphics, the Playout Channel retrieves clips from the clips directory and graphics from the graphics directory on the Spectrum video server. Each MediaPort or ChannelPort channel can be connected to one Playout Channel.

The following table shows how many Playout Channels are available per video server.

Table 10-1: Playout Channels per Video Server

Video Server	# Playout Channels
MediaDirector 2201	12
MediaDirector 2202	24

MediaCenter configured with two public networking ports	12
MediaCenter configured with four public networking ports	8
MediaDeck 7000	4
MediaDirector 2251	12
MediaDirector 2251	24

## Configuring a Playout Channel

Note that when you configure a Playout Channel using the Playout Channel Properties page, you must associate the Playout Channel with an active player only, not an inactive one. For instructions on creating and activating players, refer to [Player Configuration](#).

### To configure a Playout Channel:

1. In SystemManager, click the **Video Server Services** icon in the left-hand column to open the Video Server Services page as shown in [Figure 10–1](#).

Playout Channels					
SMT_D11-01017	Disable Traffic And Billing Service		Edit Media Fetch Service		
Channel Name	IP Address	Port	Player Name	ChannelPort/MediaPort Name	Channel
D11_01017-1 (443133)	10.10.38.131	8081	Unknown	Unknown	A
D11_01017-2 (443135)	10.10.38.131	8082	Unknown	Unknown	A
D11_01017-3 (443137)	10.10.38.131	8083	Unknown	Unknown	A
D11_01017-4 (443139)	10.10.38.131	8084	Unknown	Unknown	A
BP_D9-00076					
Channel Name	Disable Traffic And Billing Service		Edit Media Fetch Service		
Channel Name	IP Address	Port	Player Name	ChannelPort/MediaPort Name	Channel
KHRM (443285)	10.10.45.11	8081	Unknown	Unknown	A
D9_00076-2 (443287)	10.10.45.11	8082	Unknown	Unknown	A
D9_00076-3 (443289)	10.10.45.11	8083	Unknown	Unknown	A
D9_00076-4 (443291)	10.10.45.11	8084	Unknown	Unknown	A
D9_00076-5 (443293)	10.10.45.11	8085	Unknown	Unknown	A

Figure 10–1: Video Server Services Page

From the Video Server Services page, under Playout Channels, you can view details of all the Playout Channels grouped according to video server. For each video server Playout Channel, you can view the following:

- **Enable/Disable Traffic and Billing Service:** If you have purchased the necessary license, this link will be activated. For details, refer to [Enabling the Traffic and Billing Service](#).
- **Edit Media Fetch Service:** If you have purchased the necessary license, this link will be activated. For details, refer to [Configuring the Media Fetch Service](#).
- **Channel Name:** Displays the name of the Playout Channel.
- **IP Address:** Displays the IP address of the Spectrum video server on which the Playout Channel is running.
- **Port:** Displays the network port for the Playout Channel. This is the port that PreviewTool and SystemManager use to connect to a Playout Channel.

- **Player Name:** Displays the name of the active player associated with the Playout Channel.
  - **ChannelPort/MediaPort Name:** Displays the name of the MediaPort or ChannelPort, which is connected to the Playout Channel.
  - **Channel:** Displays the ChannelPort or MediaPort channel used by the Playout Channel.
2. From the **Channel Name** column click a Playout Channel to open the **Playout Channel Properties** page, as shown in *Figure 10-2*.

The screenshot shows the 'Playout Channel Properties' dialog box with four tabs:

- Channel:** Shows the 'Channel Name' as 'D11\_01017-1'.
- Location:** Shows the 'Host Name' as 'SMT\_D11-01017', 'Network Port' as '8081', 'Client Network Port' as '8201', and 'Channel Type' as 'Playout'.
- Controlled Devices:** Shows the 'Current Player' as 'None', 'Player Name' as 'None', 'Current Frame Rate' as '29.97', 'Playout Frame Rate' as 'Unknown', 'Media/Channel Port Name' as 'None', and 'Channel' as 'A'.
- Graphic Fade Rates:** Shows the 'Slow Fade Duration (seconds)' as '3.00', 'Medium Fade Duration (seconds)' as '1.00', 'Fast Fade Duration (seconds)' as '0.33', 'Default Fade In Rate' as 'Cut', and 'Default Fade Out Rate' as 'Cut'.

**Figure 10–2: Playout Channel Properties**

3. On the **Playout Channel Properties** page, change the following settings, as necessary.

Under Channel, configure the following:

- **Channel Name:** Enter the name of the Playout Channel.

Under Location, configure the following:

- **Host Name:** Displays the name of the Spectrum video server.
- **Network Port:** Displays the network port for this Playout Channel. This is the port that PreviewTool and SystemManager use to connect to a Playout Channel.

- **Client Network Port:** Displays the network port that the PlayoutTool uses to connect to a Playout Channel. This port is also used by SystemManager, and by the Traffic and Billing service to transfer playlist and as-run log files.
- **Channel Type:** Select between the following:
  - Preview:** If selected, this channel can be used with the PreviewTool to run short playlists of video clips or optionally external video with graphic overlays and play them on a MediaPort or ChannelPort. A ChannelPort is required if the playlist contains external video or graphics.
  - Playout:** If selected, this channel can be used for 24/7 on-air playout of video clips and graphics. The channel can also use the Traffic and Billing and Media Fetch services.

Under Controlled Devices, configure the following:

- **Current Player:** Displays the name of the player currently associated with this Playout Channel.
- **Player Name:** Use the drop-down arrow to select the player that will be associated with this Playout Channel. Once you select a player, the **Media/ChannelPort Name**, **Playout Frame Rate**, and **Channel** fields will be automatically filled based on the player settings.

Note the following points:

- If you have selected **Channel Type: Preview**, all active players will be available in the in Player Name drop-down menu. If you have selected **Channel Type: Playout**, only players configured for **Control: Harmonic** on the Player Properties page will be available. For instructions on configuring players, refer to [Player Configuration](#).
- Only active players will be available in Player Name drop-down menu, not inactive ones. For instructions on creating and activating players, refer to [Player Configuration](#).
- Only players that have a video track attached to a MediaPort or ChannelPort will be visible in the Player Name drop-down menu.
- **Media/ChannelPort Name:** This field automatically displays the name of the MediaPort or ChannelPort attached to the player shown in the Player Name field.
- **Current Frame Rate:** This field displays the frame rate of the player shown in the Current Player field.
- **Playout Frame Rate:** This field automatically displays the frame rate of the player shown in the Player Name field.
- **Channel:** This field automatically displays the name of the Channel used by the player in the Player Name field.

Under Graphic Fade Rates, configure the following:

- **Slow Fade Duration (seconds):** Enter the duration you want a slow fade of a template to last. This time duration can be entered as a decimal.
- **Medium Fade Duration (seconds):** Enter the duration you want a medium fade of a template to last. This time duration can be entered as a decimal.
- **Fast Fade Duration (seconds):** Enter the duration you want a fast fade of a template to last. This time duration can be entered as a decimal.
- **Default Fade In Rate:** Click the drop-down arrow, and select Slow, Medium, Fast, or Cut to set the default fade in rate of templates.
- **Default Fade Out Rate:** Click the drop-down arrow, and select Slow, Medium, Fast, or Cut to set the default fade out rate of templates.

<b>Player for Time Reference</b>	
<b>Same as Player above</b>	<input type="checkbox"/>
<b>Current Player</b>	None
<b>Reference Player Name</b>	None <input type="button" value="▼"/>
<b>Time Zone</b>	America/Los_Angeles <input type="button" value="▼"/>
<b>Discontinuity Warning (hh:mm:ss;ff)</b>	00:00:00;00
<b>DST Transition Range (hhh:mm:ss)</b>	00:01:00
<b>Current Frame Rate</b>	Unknown
<b>Reference Frame Rate</b>	Unknown <input type="button" value="▼"/>
<b>Traffic Settings</b>	
<b>Playlist Load Time (Hours)</b>	24
<b>Error Checking</b>	
<b>Playlist Warning Threshold (hh:mm:ss)</b>	01:00:00
<b>Playlist Error Threshold (hh:mm:ss)</b>	00:30:00
<b>Schedule Gap Error Threshold (Seconds)</b>	0.00
<b>Schedule Overlap Error Threshold (Seconds)</b>	0.00
<b>Generate Error on Empty Playlist</b>	<input type="checkbox"/>
<b>Enable Media Fetch</b> <input type="checkbox"/>	

Figure 10–3: Playout Channel Properties

Under Player for Time Reference, configure the following:

- **Same as Player Above:** Select this option if you want the current player for this Playout Channel to be used as a time reference for the Playout Channel.
- **Current Player:** Displays the name of the player currently associated with this Playout Channel.
- **Current Frame Rate:** Displays the frame rate for the current player.
- **Reference Player Name:** From the drop-down menu, select from the list of activated players. The selected player will be used as a time reference for the Playout Channel. Use this setting if you want to use a different player to provide the time reference than the playout channel's current player.
- **Reference Frame Rate:** This field automatically displays the frame rate of the reference player shown in the Reference Player Name field.
- **Time Zone:** Select the time zone to be used for the reference player.
- **Discontinuity Warning:** Enter the threshold value used by Spectrum to generate a warning if it detects a discontinuity in the timecode for the MediaPort or ChannelPort reference. For example, if this value is set to 0, any discontinuity in the timecode will result in warning.
- **DST Transition Range:** Enter the threshold value used by Spectrum to generate a warning if the daylight savings time transition occurs differently than expected.

Under Traffic Settings, configure the following:

- **Playlist Load Time:** Enter the number of hours before the start time of the playlist that the playout channel will load the playlist.

Under Error Checking, configure the following:

- **Playlist Warning Threshold:** Enter the threshold value to be used by Spectrum before sending a warning if there is a problem in the playlist (for example, missing material, or schedule gap). If the time from the current on-air time to time of error is less than threshold, Spectrum will generate a warning.
- **Playlist Error Threshold:** Enter the threshold value to be used by Spectrum before sending an error if there is a problem in the playlist (for example, missing material, or schedule gap). If the time from the current on-air time to time of error is less than threshold, Spectrum will generate a error.
- **Schedule Gap Error Threshold:** Enter the threshold value to be used by Spectrum before sending an error if there is a gap in the playlist. If there is a schedule gap in the playlist greater than the threshold, then Spectrum will generate an error.
- **Schedule Overlap Error Threshold:** Enter the threshold value to be used by Spectrum before sending an error if there is an overlap in the playlist. If there is a schedule overlap in the playlist greater than the threshold, then Spectrum will generate an error.
- **Generate Error on Empty Playlist:** When selected, if there are not enough events in the playlist to extend past the time indicated in the Playlist Error Threshold field, Spectrum will generate an error.

If you wish to enable the Media Fetch service, click **Enable Media Fetch**. For instructions on configuring Media Fetch, see [Configuring the Media Fetch Service](#).

Transitions											
Transition Name	Transition Type	Video Transition Type	Video Fade Up (Seconds)	Video Fade Down (Seconds)	Audio Transition Type	Audio Fade Up (Seconds)	Audio Fade Down (Seconds)	Audio Transition Lag (Seconds)	Default Transition	Remove	
Cut	Simple Fade	Fade	0.00	0.00	Fade	0.00	0.00	0.00	<input checked="" type="radio"/>	<input type="checkbox"/>	
Cut-Fade	Simple Fade	Fade	1.00	0.00	Fade	1.00	0.00	0.00	<input checked="" type="radio"/>	<input type="checkbox"/>	
Fade-Out	Simple Fade	Fade	0.00	1.00	Fade	0.00	1.00	0.00	<input checked="" type="radio"/>	<input type="checkbox"/>	
S V-Fade	Simple Fade	Fade	3.00	3.00	Fade	3.00	3.00	0.00	<input checked="" type="radio"/>	<input type="checkbox"/>	
M V-Fade	Simple Fade	Fade	1.00	1.00	Fade	1.00	1.00	0.00	<input checked="" type="radio"/>	<input type="checkbox"/>	
F V-Fade	Simple Fade	Fade	0.33	0.33	Fade	0.33	0.33	0.00	<input checked="" type="radio"/>	<input type="checkbox"/>	
S Mix	Simple Mix	Fade	3.00	3.00	Fade	3.00	3.00	0.00	<input checked="" type="radio"/>	<input type="checkbox"/>	
M Mix	Simple Mix	Fade	1.00	1.00	Fade	1.00	1.00	0.00	<input checked="" type="radio"/>	<input type="checkbox"/>	
F Mix	Simple Mix	Fade	0.33	0.33	Fade	0.33	0.33	0.00	<input checked="" type="radio"/>	<input type="checkbox"/>	
Aud-Lead	Custom Mix	Mix	3.00	3.00	Mix	1.00	1.00	-1.00	<input checked="" type="radio"/>	<input type="checkbox"/>	

[Add Transition](#) [Remove selected rows](#)

Figure 10-4: Playout Channel Properties

Under Transitions, configure as follows:

**NOTE:** Note that this section applies only to primary events, which include clips and external SDI input.

- **Transition Name:** Enter the name of the transition.
- **Transition Type:** Select between the following transition types:
  - Simple Fade:** Sets the video and audio transition types to Fade.
  - Simple Mix:** Sets the video and audio transition types to Mix

- Custom Mix:** Allows you to select different video and audio transition types for this transition.
- **Video Transition Type:** Select between Fade, Mix, or Cut.
- **Video Fade Up:** Enter the time from the midpoint of the video transition to the end point of the video transition. This sets the rate for the second half of the video transition.
- **Video Fade Down:** Enter the time from the start point of the video transition to the mid point of the video transition. This sets the rate for the first half of the video transition.
- **Audio Transition Type:** Select between Fade, Mix, or Cut.
- **Audio Fade Up:** Enter the time from the midpoint of the audio transition to the end point of the audio transition. This sets the rate for the second half of the audio transition.
- **Audio Fade Down:** Enter the time from the start point of the audio transition to the mid point of the audio transition. This sets the rate for the first half of the audio transition.
- **Audio Transition Lag:** Enter the number of seconds that the audio transition will lag behind video transition, referenced to the mid point of both. You may enter a negative value if you wish the audio transition to precede the video transition.
- **Default Transition:** Select the transition to be used if the playlist does not specify a transition.
- **Remove:** Select to specify a transition or multiple transitions that you wish to remove.
- **Add Transition:** Click to add a transition.
- **Remove selected rows.** Click to remove selected transitions.

<b>Traffic and Billing</b>	
<b>Reset to Default</b>	<input type="checkbox"/>
<b>Playlist Path</b>	/mnt/fs0/traffic/D11_01017/playlists
<b>As-Run Path</b>	/mnt/fs0/traffic/D11_01017/asruns

<b>Channel Override</b>	
<b>Layer</b>	1 <input type="button" value="▼"/>
<b>Template</b>	<input type="text"/>
<input type="button" value="Apply"/> <input type="button" value="Cancel"/> <input type="button" value="Done"/>	

Figure 10–5: Playout Channel Properties

Under Traffic and Billing, you may configure specific locations to be used for the playlist or as-run log files. Note the following:

- Multiple Playout Channels may use the same locations for the playlist or as-run log files on a video server. The default locations are shared by all Playout Channels on a video server.
- Note the following default location on your video server for loading your playlists:  
`//<IP address>/fs0/traffic/<serial number>/playlists`
  - IP address: The IP address of your Spectrum video server.
  - Serial number: The serial number of your Spectrum video server

Both the IP address and serial number of your video server can be found on the Video Server Properties page. See [Viewing Spectrum Video Server Properties](#) for details.

- Note the following default location on your video server for storing your as-run lists:

//<IP address>/fs0/traffic/<serial number>/asruns

□ IP address: The IP address of your Spectrum video server.

□ Serial number: The serial number of your Spectrum video server

Both the IP address and serial number of your video server can be found on the Video Server Properties page. See [Viewing Spectrum Video Server Properties](#) for details.

Configure Traffic and Billing Translation settings as follows:

- **Reset to Default:** Select to configure the Playout Channel to use the default playlist and as-run log locations.
- **Playlist Path:** Enter the path to be used for loading your playlist to the video server. Fill in this field only if you wish to configure a different path than the default location. Note that you must use forward slashes in the path name. Back slashes are treated as escape characters and will result in an invalid path.
- **As Run Path:** Enter the path to be used for storing your as-run files on the video server. Fill in this field only if you wish to configure a different path than the default location. Note that you must use forward slashes in the path name. Back slashes are treated as escape characters and will result in an invalid path.

Under Channel Override, you may configure the layer and template to be used when the Channel Override button in PlayoutTool is clicked. If you click the **Channel Override** button using the PlayoutTool, and Channel Override is enabled, OPC will switch the channel to black, locate the template specified in this field and load it on the specified layer for this channel.

Configure as follows:

- **Layer:** Select the layer to be used to load the specified template when a channel is overridden with the Channel Override button.
- **Template:** Select the default template to be used when a channel is overridden with the Channel Override button. If this field is left empty, when the Channel Override button is clicked, the video output will go to black. Note that you must use forward slashes in the path name. Back slashes are treated as escape characters and will result in an invalid path.
- **Apply (button):** Click to apply settings.
- **Cancel (button):** Click to revert to default settings.
- **Done (button):** Click to return to the ChannelPort Properties page.

## Enabling the Traffic and Billing Service

The traffic and billing service is an integral part of the OPC feature that allows you to upload to your Spectrum system a playlist of primary and secondary events (such as video clips, audio, and graphics) for a specified channel and to retrieve a corresponding as-run file. Once traffic and billing is enabled, you can configure traffic and billing settings and override the default locations of playlist and as-run folders using the Playout Channel Properties page.

### To enable traffic and billing:

1. Make sure you have created the player you wish to use for OPC and configured it to use "Harmonic Playout" for Control. Refer to [Initial Player Configuration](#).

2. Make sure you have attached the player you wish to use for OPC to your MediaPort or ChannelPort and then activated it. Refer to [Attaching Devices and Setting Conversion Options](#) and [Changing the Player State: Activating and Deactivating, Enabling and Disabling](#) for instructions.
3. In SystemManager, click the **Video Server Services** icon in the left-hand column to open the Video Server Services page.
4. Under Playout Channels, click **Enable Traffic and Billing Service** for the desired video server to enable Traffic and Billing for all channels on the video server.
5. Configure the traffic and billing settings on the Playout Channel Properties page for the desired playout channels. See [Configuring a Playout Channel](#) for details.

For instructions on creating and loading a Spectrum OPC playlist and retrieving a Spectrum as-run list, refer to "Spectrum Onboard Playout Control" in the *Spectrum Onboard Playout Control and PlayoutTool*.

## Configuring the Media Fetch Service

The Media Fetch service is a licensed service that runs on your Spectrum video server and coordinates the transfer of media such as video clips, audio files, or graphical elements from a remote file system to the local file system on your video server via FTP. Once Media Fetch is configured and enabled for a Playout Channel, if the Playout Channel detects that material indicated on the playlist is missing from the local file system, then Media Fetch searches the FTP server(s) that have been configured on the Media Fetch Configuration page in SystemManager and retrieves it.

Note the following limitations:

- Media Fetch supports connections to a maximum of four FTP servers.
- Media Fetch supports a maximum of four simultaneous transfers.
- Media Fetch does not support the AS02 wrapper type.
- If a media file is specified without a file extension, Media Fetch will search for it using the following file extensions based on the specified media type:
  - Video files: .mov, .mxf
  - Audio files: .wav, .aiff
  - Graphic files: .swf, .png, .jpg, .jpeg, .bmp, .tga, .mp4, and .flv
- Media Fetch assumes that only media files with extensions of .mov and .mxf may reference additional media files.
- If you have configured subtitles for a player, Media Fetch will search for associated subtitle files based on the subtitle file extensions.

### About File System Management

The File System Management feature allows you to manage file space on the video server file system to make room for new media. Once enabled, File System Management will delete older media files to make room for new media files. It determines which files to delete based on which files are the oldest and largest and deletes those files first. It also follows the parameters that you set in the **Cleanup Threshold Percent** and **Protected Files** fields. For example, if the Cleanup Threshold is set to 90, once the video server file system is at least 90 percent full, File System Management will delete the largest and least recently used files to maintain 10% disk free space. However, it will not delete any files specified in the **Protected Files** field.

Note the following:

- File System Management only deletes files on video server directories that are currently being accessed by the Playout Channels on the video server. For a given Playout Channel, this includes the directory used by the player shown in the **Current Player** field on the Playout Channel Properties page. By default, these locations include /fs0/clip.dir for video and /fs0/gfx.dir for graphic and audio files.
- The video server logs the history of all file deletions at /fs0/<dirname>/logs.

**To configure the Media Fetch service:**

1. Make sure you have enabled the Traffic and Billing Service for the video server that you wish to use for Media Fetch. See [Enabling the Traffic and Billing Service](#).
2. Make sure you have selected **Channel Type: Playout** on the Playout Channel Properties page for the Playout Channel(s) you wish to use. See [Configuring a Playout Channel](#) for more details on configuring a Playout Channel.
3. Make sure you have clicked the **Enable Media Fetch** checkbox on the Playout Channel Properties page for the Playout Channel(s) you wish to use. See [Configuring a Playout Channel](#) for more details on configuring a Playout Channel.
4. From the **Video Server Services** page, locate the video server you wish to configure, and then click the corresponding **Edit Media Fetch** link to open the Media Fetch Service Configuration page as shown in [Figure 10–6](#).

File System Management	
<b>Enable</b>	<input type="checkbox"/>
<b>Cleanup Threshold Percent(5 to 98)</b>	90
<b>Protected Files</b>	(Empty list)

Remote Filesystem and Directory Locations	
<b>Transfer Window(60 to 1440 minutes)</b>	180
<b>Transfer Retry Period(1 to 10 minutes)</b>	120
<b>Max Attempts(1 to 10)</b>	5
<b>Add FTP Server</b>	

**Figure 10–6: Media Fetch Service Configuration Page**

5. If desired, configure **File System Management** as follows:
  - **Enable:** Click to enable File System Management.
  - **Cleanup Threshold Percent:** Enter the percent of disk space that marks when file system management should start. The default value is 90 percent.
  - **Protected Files:** Enter the names of any files that you wish to not be deleted by file system management (separated with commas or semicolons).
6. Configure the **Remote File System and Directory Locations** as follows:

- **Transfer Window:** Enter the number of minutes prior to scheduled air time that a missing file will transfer.
  - **Transfer Retry Period:** Enter the number of minutes you would like Media Fetch to wait, if a transfer fails, before trying again.
  - **Max Attempts:** Enter the maximum number of attempts you would like Media Fetch to make to transfer a file if the original transfer attempt fails.
7. Click **Add FTP Server** to open the **FTP Settings** section.

The screenshot shows the 'FTP Settings' configuration window. It contains the following fields:

- Name:** [Text input field]
- Path:** [Text input field]
- FTP Server:** [Text input field]
- FTP Server Port:** [Text input field] (value: 21)
- FTP Server User Name:** [Text input field]
- FTP Server Password:** [Text input field]

Buttons at the bottom include: **Remove FTP Server**, **Add FTP Server**, **Reset To Defaults**, **Apply**, **Cancel**, and **Done**.

Figure 10–7: Media Fetch Service Configuration—FTP Settings

8. Configure your FTP settings as follows:
- **Name:** Enter the name of the FTP server you wish to use.
  - **Path:** Enter the path that Media Fetch will use to access files on your FTP server.
  - **FTP Server:** Enter the IP address or host name of the FTP server.
  - **FTP Server Port:** Enter the port number for your FTP server that will be used by Media Fetch. The default is port 21.
  - **FTP Server User Name:** Enter the user name for your FTP server.
  - **FTP Server Password:** Enter the password for your FTP server.
  - **Remove FTP Server** (button): Click to remove an FTP Server at any time.
9. Click **Apply** to save your changes.

# Chapter 11

## Spectrum Storage Configuration

This chapter provides configuration and operation instructions for the MediaStores and storage enclosures in a Spectrum system. Choose from the following:

- [Viewing Spectrum Storage Properties](#)
- [Changing the MediaStore Name](#)
- [Winking all Drives on a MediaStore](#)
- [Winking one Drive on a MediaStore](#)



**NOTE:** For information on the MSC-5000 Series MediaStores and the MSC-4400 MediaStores, contact Technical Support.

### Viewing Spectrum Storage Properties

On the **Storage Properties** page you can view properties as well as perform tasks such as labeling the selected MediaStore and checking the status of the disks and other components in an enclosure.

#### To view Storage properties:

1. On the **System** diagram, click any MediaDirector heading (or icon) to reach the **MediaDirector Physical Configuration** page, shown in [Figure 11-1](#).

The screenshot shows the 'D8\_ECOSYS\_BKP Physical Configuration' page. At the top, there's a blue header bar with the title. Below it is a toolbar with icons for 'Sharing with' and 'D8\_ECOSYS\_BKP'. A message states: 'All MediaStores connected to this MediaDirector are of type MS or MSS.' The main area is titled 'Connected Storage' and contains a table with the following data:

Name	GUID	Model	Environment Status	F/C Loops	# Drives	RAID sets (channel)
MediaStore2963	20000050-cc013500	RS1602-FS44 (MSS)	OK	0, 1	16	RaidSet2549 (A) RaidSet2551 (A)

Below the table, a note says 'Click on an object's image to view detail information.' and 'Refresh Interval for this page is 30 seconds.'

**Figure 11-1: MediaDirector Physical Configuration**

2. Click the picture of the desired MediaStore to display its **Storage Properties** page. [Figure 11-2](#) shows the properties page for a MediaStore 4000.



Figure 11–2: MediaStore 4000 Properties

## General Information

You can view the following properties in the **General Information** section:

- **Name:** Displays a user-definable name given to a physical enclosure.
- **Change Name:** Click to rename a MediaStore. Refer to [Changing the MediaStore Name](#) for instructions.

**Wink state for all MediaStore drives:** Click to change the wink state of all drives on the MediaStore. When on, all drive LEDs wink on the front panel of the MediaStore. Refer to [Winking all Drives on a MediaStore](#) for instructions.



**NOTE:** Drives that are winked will only wink for 30 seconds.

- **Type:** Indicates the MediaStore model type. Current types are MS, MSC, and MSS models.



**NOTE:** Spectrum systems do not support the intermixing of MS, MSC, and MSS MediaStore models. All MediaStores on any Spectrum system must be either MS, MSC, or MSS. In addition, Hard Disk drives may not be swapped between these three models of MediaStore. If you have multiple Spectrum systems, with a mixture of MediaStore models, make sure that replacement drives at your facility are all configured for the correct operation. Contact Technical Support for details.

- **Model #:** Indicates the MediaStore manufacturer's model number.
- **Firmware Rev.:** Lists the firmware level within the MediaStore's controller unit. This information is used primarily for debugging purposes.
- **GUID:** Displays the Global Unique Identifier for the MediaStore. This information is primarily used for debugging purposes.
- **MediaDirectors:** Displays a list of MediaDirectors that are physically connected to the MediaStore.
- **Last Message:** This line displays the last message received that deals with the selected MediaStore.

- **Status Current At:** Indicates when the currently displayed MediaStore enclosure information and status was last obtained.

## Environment



**NOTE:** This section does not appear for the MediaStore 5000 series, MediaCenter, or MediaDeck 7000.

In the **Environment** section:

- **Thermal Status:** Displays the thermal status for the MediaStore enclosure.
- **Power Supply A and Power Supply B:** Displays each power supply's status within the MediaStore enclosure.
- **Fan A through Fan B:** Displays each fan's status within the MediaStore enclosure.
- **Clear Alarm:** Displays when the power supply of a 4000 Series MediaStore has an alarm condition. Resolve the cause of the alarm condition and then click **Clear Alarm** to clear the alarm within the MediaStore.

*Figure 11–3* displays the bottom portion of the **Storage Properties** page which includes the Loop Resiliency Controllers and Disks sections.

Loop Resiliency Controllers			
Loop Resiliency Controller A		Loop Resiliency Controller B	
<b>Status</b> OK		<b>Status</b> OK	
<b>Firmware Revision</b> 04		<b>Firmware Revision</b> 04	
<b>Port Host 0</b> Bypassed, No transceiver		<b>Port Host 0</b> Inserted	
<b>Port Host 1</b> Inserted		<b>Port Host 1</b> Bypassed, No transceiver	
<b>Port Host 2</b> Bypassed, No transceiver		<b>Port Host 2</b> Bypassed, No transceiver	
<b>Port Host 3</b> Bypassed, No transceiver		<b>Port Host 3</b> Bypassed, No transceiver	

Disks						
16 Disks (Empty Slots Not Shown)						
Slot	Model, Revision	Serial #	GUID	Loop Master	Status	
MediaStore2963:1	SEAGATE ST3146855FC, XR55	<a href="#">3LN1HMBF</a>	<a href="#">20000018-62ca6221</a>	MSC/MS/MSS		Alive
MediaStore2963:2	SEAGATE ST3146855FC, XR55	<a href="#">3LN1GB9N</a>	<a href="#">20000018-62ca6bac</a>	MSC/MS/MSS		Alive
MediaStore2963:3	SEAGATE ST3146855FC, XR55	<a href="#">3LN0QDJ2</a>	<a href="#">20000018-62cac4ba</a>	MSC/MS/MSS		Alive
MediaStore2963:4	SEAGATE ST3146855FC, XR55	<a href="#">3LN1GBTI</a>	<a href="#">20000018-62ca6bfe</a>	MSC/MS/MSS		Alive
MediaStore2963:5	SEAGATE ST3146855FC, XR55	<a href="#">3LN1GBAF</a>	<a href="#">20000018-62ca6bc9</a>	MSC/MS/MSS		Alive
MediaStore2963:6	SEAGATE ST3146855FC, XR55	<a href="#">3LN1CYTQ</a>	<a href="#">20000018-62ca4fea</a>	MSC/MS/MSS		Alive
MediaStore2963:7	SEAGATE ST3146855FC, XR55	<a href="#">3LN1GHCN</a>	<a href="#">20000018-62ca4ea3</a>	MSC/MS/MSS		Alive
MediaStore2963:8	SEAGATE ST3146855FC, XR55	<a href="#">3LN1GB9T</a>	<a href="#">20000018-62ca6bb0</a>	MSC/MS/MSS		Alive
MediaStore2963:9	SEAGATE ST3146855FC, XR55	<a href="#">3LN1GBAZ</a>	<a href="#">20000018-62ca6bdb</a>	MSC/MS/MSS		Alive
MediaStore2963:10	SEAGATE ST3146855FC, XR55	<a href="#">3LN1EM62</a>	<a href="#">20000018-62ca6b88</a>	MSC/MS/MSS		Alive
MediaStore2963:11	SEAGATE ST3146855FC, XR55	<a href="#">3LN1E57T</a>	<a href="#">20000018-62ca6be9</a>	MSC/MS/MSS		Alive
MediaStore2963:12	SEAGATE ST3146855FC, XR55	<a href="#">3LN1J2DF</a>	<a href="#">20000018-62ca621d</a>	MSC/MS/MSS		Alive
MediaStore2963:13	SEAGATE ST3146855FC, XR55	<a href="#">3LN1GHC7</a>	<a href="#">20000018-62ca4efb</a>	MSC/MS/MSS		Alive
MediaStore2963:14	SEAGATE ST3146855FC, XR55	<a href="#">3LN1CYVY</a>	<a href="#">20000018-62ca4fdb</a>	MSC/MS/MSS		Alive
MediaStore2963:15	SEAGATE ST3146855FC, XR55	<a href="#">3LN1GBA6</a>	<a href="#">20000018-62ca6bbf</a>	MSC/MS/MSS		Alive
MediaStore2963:16	SEAGATE ST3146855FC, XR55	<a href="#">3LN1GBA4</a>	<a href="#">20000018-62ca6be4</a>	MSC/MS/MSS		Alive

*Figure 11–3: Storage Properties—Loop Resiliency Controllers and Disks Sections*

## Loop Resiliency Controllers



**NOTE:** This section does not appear for the MediaStore 5000 series, MediaCenter, or MediaDeck 7000.

In the **Loop Resiliency Controllers** section, some or all of the following information may be displayed depending on MediaStore model type:

- **Loop Resiliency Controller A-B (MS Models), 1-2 (MSC Models):** Information for each **Loop Resiliency Controller (LRC)** is available as follows:
  - **Status:** Shows the general status for the LRC.

- Firmware Revision:** Shows the firmware revision level for the disks in the enclosure. Note that this information is displayed only for MS MediaStore model types.
- Port Host 0-3:** Shows the current status for each of the LRC's ports (for example "Inserted", "Bypassed"). Note that this information is displayed only for MS MediaStore model types.

## Disks

In the **Disks** section:

- **Slot:** Displays the slot ID, which is the numeric identifier that represents the physical position for each disk drive in the enclosure.
- **Model, Revision:** Displays the manufacturer's model number and firmware revision level for each disk drive in the enclosure.
- **Serial #:** Displays the manufacturer's serial number for each disk drive in the enclosure. Click the serial number hyperlink to access the **Drive Properties** page for the selected drive.
- **GUID:** Displays the Global Unique Identifier for a disk drive in a MediaStore. This information is primarily used for debugging purposes.
- **Loop Master:** (not shown for MediaStore 5000 series, MediaCenter, or MediaDeck 7000) Displays whether a drive has been upgraded (converted) to the latest drive technology available from Harmonic. The following text may appear in this field:
  - MSC only:** Indicates the particular drive has not been upgraded. As Spectrum Systems do not support intermixing drives with older drive technology and the latest new technology, drives which are labeled as **MSC only** should undergo the technology conversion process before being mixed with drives which are built on newer technology (MS and MSS-4000 Series MediaStores).
  - MSC/MS/MSS:** Indicates the drive has been upgraded to the newer drive technology.



**NOTE:** Contact Technical Support for details on upgrading systems with existing MSC-4000 Series MediaStores to newer disk technologies.

- Status:** Displays the current operational status for each disk drive in the enclosure. Click the **Disk Drive** icon to access the **Drive Properties** page for the selected drive.

## Changing the MediaStore Name

Renaming may help you more easily locate MediaStores and storage enclosures throughout the SystemManager application.

### To change a MediaStore's name:

1. Click the **Configuration** tab to display the **Configuration** page and **System** diagram.
2. If there is more than one MediaDirector in your system, make a note of the MediaDirector to which the specific MediaStore is attached. Next, click a single or dual host **MediaDirector** icon to display the **MediaDirector Physical Configuration** page for the selected MediaDirector.
3. For the specific MediaStore that you want to change, click that MediaStore's picture (there may be more than one) to display the **Storage Properties** page.
4. Click **Change Name** to display the **Change MediaStore Name** page.
5. Type the new name in the text box.

Refer to [About Naming Files and System Elements](#) for naming conventions.

6. Click **Save** to return to the **Storage Properties** page.

## Winking all Drives on a MediaStore

**To wink all drives on a selected MediaStore:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. If there is more than one MediaDirector in your system, make a note of the MediaDirector to which the specific MediaStore is attached. Next, click a single or dual host **MediaDirector** icon to display the **MediaDirector Physical Configuration** page for the selected MediaDirector.
3. For the specific MediaStore that you want to change, click that MediaStore's picture (there may be more than one) to display the **Storage Properties** page.
4. At the top of the page, check the **Wink state for all MediaStore drives** line.
5. Change the MediaStore's wink state (for all drives) as desired:
  - If currently On, click **Wink Off** to stop winking all drives on the MediaStore.
  - If currently Off, click **Wink On** to start winking all drives on the MediaStore.

## Winking one Drive on a MediaStore

**To wink a single drive on a selected MediaStore:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. If there is more than one MediaDirector in your system, make a note of the MediaDirector to which the specific MediaStore is attached. Next, click a single or dual host **MediaDirector** icon to display the **MediaDirector Physical Configuration** page for the selected MediaDirector.
3. For the specific MediaStore whose drives you want to change, click that MediaStore's picture (there may be more than one) to display the **Storage Properties** page.
4. Scroll down to the “**Status**” section and click the **Serial Number Hyperlink** or the **Disk Drive** icon for the drive that you want to wink. The **Drive Properties** page appears.
5. Check the **Individual Drive Wink State** line.
6. Change the drive's wink state as desired:
  - If currently On, click **Wink Off** to stop winking the individual drive.
  - If currently Off, click **Wink On** to start winking the individual drive.



**NOTE:** Drives that are winked will only wink for 30 seconds.

If drive changes are required, refer to the *Spectrum System Component Replacement Guide* for instructions.

# Chapter 12

## MediaPort Configuration

---

This chapter provides configuration and operation instructions for MediaPorts and MediaPort modules in a Spectrum system. Choose from the following:

- [\*Viewing MediaPort Properties\*](#)
- [\*Configuring Simulcast Mode\*](#)
- [\*Configuring Subtitle Conversion\*](#)
- [\*Configuring GPIO\*](#)
- [\*Changing the MediaPort Name\*](#)
- [\*Changing the MediaPort Description\*](#)
- [\*Changing the MediaPort Wink State\*](#)
- [\*Rebooting the MediaPort\*](#)
- [\*Upgrading MediaPort Firmware\*](#)
- [\*Upgrading the MediaPort License\*](#)
- [\*Viewing MediaPort Alarms and Events\*](#)
- [\*Configuring a MediaPort Channel for Onboard Playout Control\*](#)

### Viewing MediaPort Properties

Follow these steps to view MediaPort properties:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click any MediaPort heading (or icon) to open the **MediaPort Properties** page, shown in *Figure 12-1*.

**MediaPort Properties**

<b>General Information:</b>	
<b>Name</b>	MIP-7XXX_01133 <a href="#">Change Name</a>
<b>Status</b>	Connected
<b>Model Number</b>	MIP-7100-DVH-VC3P
<b>Additional Licensed features</b>	None
<b>Serial Number</b>	1112-1477-EN-01133
<b>Boot Summary</b>	Ethernet reset from IP 10.10.45.5
<b>Last Reboot</b>	Thu Dec 06 19:49:00 2012
<b>Firmware Version</b>	tap7mip Release 7.2.0.0-12120600 (trunk)
<b>Currently Selected Firmware Version</b>	omneon.release-7.2/2012.12.06
<b>Status current at</b>	Fri Dec 7 16:05:19 2012
<b>MediaPort Description</b>	<a href="#">Change Desc</a>
<b>Last Message</b>	Fri:14:42:14: Configuration successful.
<b>Wink State</b>	Off
<b>OP-47 subtitle to/from SD</b>	Disable ▾
<a href="#">Wink on</a> <a href="#">Reboot</a>	
<a href="#">Upgrade Firmware</a> <a href="#">Done</a>	

Figure 12–1: MediaPort Properties—General Information

### General Information

In the **General Information** section you can view:

- **Name:** Displays the user-defined name given to this MediaPort.



**NOTE:** For the MediaPort 7000 series, this field displays the model number and serial number of the MediaPort.

- **Change Name:** (Not included for MediaPort 7000 series) Click to rename the selected MediaPort. Refer to [Changing the MediaPort Name](#) for instructions.
- **Status:** Displays the current network status for the selected MediaPort. This field is used primarily for diagnostic troubleshooting.
- **Model Number:** Lists the MediaPort's product model number.
- **Additional Licensed features:** Lists additional licensed features for this MediaPort. For a complete list of available licenses, refer to the *Spectrum Installation and Hardware Reference Guide*.
- **Serial Number:** Displays the MediaPort's serial number as set at the factory.
- **Boot Summary:** Displays the reason why the last reboot of the MediaPort occurred.
- **Last Reboot:** Displays the date and time of the last reboot of the MediaPort.
- **Firmware Version:** Lists the current version of firmware that resides in the MediaPort's flash memory.

Refer to “Upgrading Spectrum Firmware” in the *Spectrum System Installation and Hardware Reference Guide*.

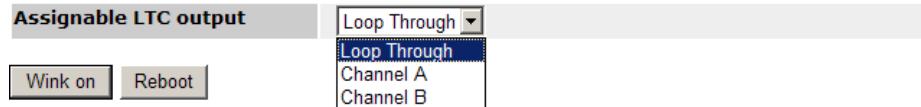
- **Currently Selected Firmware Version:** Lists the firmware version that is selected on the [Firmware Version Selection](#) page.
- **Status current at:** Lists the most recent date and time that the page was refreshed. Note that the page is automatically refreshed every 30 seconds, unless configured otherwise.
- **MediaPort Description:** Displays a scroll-able multi-line description of the selected MediaPort. This field is useful for entering data that clarifies the specific MediaPort’s role in your system.
- **Change Desc:** Click to change the MediaPort’s description. Refer to [Changing the MediaPort Description](#) for instructions.
- **Last Message:** This line displays the last error message received that deals with File System operation problems, or problems during the periodic File System check.
- **Wink State:** Describes the wink state of the MediaPort’s light bar, either On or Off. Refer to the [Wink On/Off](#) description that follows for details.
- **Number of 1394 Nodes:** (Not included for MediaPort 7000 series) Lists the number of IEEE 1394 GUID (Global Unique Identifier) for this MediaPort.
- **Node 1 GUID and Node 2 GUID:** (Not included for MediaPort 7000 series) Lists the IEEE 1394 GUID for each of the MediaPort’s two nodes. Click the hyperlink to display the [Node Properties](#) page.
- **Proxy Record Mode versus Audio Scrub Play Mode:** (for the MediaPort and MediaDeck Modules 5320, 5220, and 5600 series only) Displays either **Proxy Record** mode enabled or **Audio Scrub** mode enabled. They cannot both be enabled at the same time. Depending on the current mode, the button will show either **Set Proxy Record Mode** or **Set Audio Scrub Mode**. Click the button to change the status. You must reboot in order for the changes to take affect. For information on recording proxies, refer to [Recording Proxies with the MediaPort 5000 Series](#). For information on Audio Scrub, refer to [Configuring Audio Scrub](#).

Proxy Record Mode versus Audio Scrub Play Mode	After Next Reboot	After Last Reboot
	Proxy Record <input type="button" value="Set Audio Scrub Play Mode"/>	Proxy Record

- **OP-47 subtitle to/from SD:** (for the MediaPort 5400, 5500 and 7000 series only): This field allows you to select conversion options for subtitles which use the OP-47 standard. For instructions, refer to [Configuring Subtitle Conversion](#).
- **Simulcast or Non-Simulcast Mode:** (for the MediaPort 5500 series only) Displays either **Simulcast** mode or **Non-Simulcast** mode enabled. Click the button to change the status. For information on Simulcast mode, refer to [Configuring Simulcast Mode](#).

Simulcast or Non-Simulcast Mode	After Next Reboot	After Last Reboot
	Non-Simulcast <input type="button" value="Set Simulcast Mode"/>	Non-Simulcast

- **Assignable LTC Output:** (for the MediaPort 5320 and 5220 series only) Select the channel you wish to use for LTC output, **Channel A**, **Channel B**, or **Loop Through**.



- **Wink On/Off (button):** Click to change the wink state of the MediaPort's light bar. Refer to [Changing the MediaPort Wink State](#) for instructions.
- **Reboot (button):** Click to reboot this MediaPort. This function is typically performed after loading new firmware. Refer to [Rebooting the MediaPort](#) for instructions.
- **Upgrade Firmware (button):** click to upgrade the MediaPort firmware. Refer to [Upgrading MediaPort Firmware](#) for instructions.
- **Upgrade License (button, if available):** click to upgrade the MediaPort license. Refer to [Upgrading the MediaPort License](#) for instructions.

### GPIO Configuration (for MediaPort 7000 series only)

As of Spectrum version 6.4, the GPIO connector on the MediaPort 7000 series can be configured to provide player control. In order to use GPIO to control players, you must first configure the GPIO settings on the MediaPort properties page to create GPIO triggers, and then configure the GPIO settings for the attached players on their respective Player Properties pages to map the GPIO triggers to each player. For detailed instructions on configuring GPIO, refer to [Configuring GPIO](#).

Edit GPIO Hardware Configuration

**GPIO Configuration:**

GPIO	Input/Output	Active State	Trigger On	Name
0	Output ▾	Open ▾	Activating ▾	Out_ChA
1	Input ▾	Open ▾	Active ▾	In_ChB
2	Input ▾	Closed ▾	None ▾	Foo
3	Input ▾	Open ▾	None ▾	MIP-7XXX_00412_3
4	Input ▾	Closed ▾	None ▾	MIP-7XXX_00412_4
5	Input ▾	Closed ▾	Activating ▾	MIP-7XXX_00412_5
6	Output ▾	Open ▾	None ▾	MIP-7XXX_00412_6
7	Output ▾	Open ▾	None ▾	MIP-7XXX_00412_7

**Buttons:** Cancel | Apply

Figure 12-2: MediaPort 7000 Series Properties—GPIO Configuration

### Environment

[Figure 12-3](#) displays the Environment section of the **MediaPort Properties** page.



**NOTE:** The fields in the Environment section will vary depending on the MediaPort you are viewing.

Environment:		
Power Supplies		
<b>PS 0</b> NORMAL		
Voltage Levels		
<b>1.90V Line</b>	1.87 Volts	( Range: 1.83 - 1.95 )
<b>2.50V Line</b>	2.47 Volts	( Range: 2.42 - 2.58 )
<b>3.30V Line</b>	3.25 Volts	( Range: 3.13 - 3.47 )
<b>5.00V Line</b>	4.99 Volts	( Range: 4.75 - 5.25 )
<b>12.00V Line</b>	10.84 Volts	( Range: 10.00 - 14.25 )
Temperatures		
<b>Mainboard In</b>	40 Celsius	( Range: 10 - 48 )
<b>Mainboard Out</b>	42 Celsius	( Range: 10 - 55 )
Fans		
<b>Fan 0</b>	8437 RPM	( Range: 4000 - 15000 )
<b>Fan 1</b>	8231 RPM	( Range: 4000 - 15000 )
<b>Fan 2</b>	9121 RPM	( Range: 4000 - 15000 )
<b>Fan 3</b>	8231 RPM	( Range: 4000 - 15000 )

Figure 12–3: MediaPort Properties—Environment



**NOTE:** For MediaPort modules installed on a MediaDeck 7000, refer to the Environment section of the MediaDeck Properties page for information on power supplies and fans.

- **Power Supplies:** Shows the status of the MediaPort's power supplies. This information is used primarily for diagnostic troubleshooting. The number of power supplies varies with MediaPorts.
- **Voltage Levels:** Lists the current voltages of the power supplies and other components. This information is used primarily for diagnostic troubleshooting. The valid ranges are also displayed. Note that these ranges are not configurable.
- **Temperatures:** Displays the current temperature (in Centigrade) of this MediaPort. This information is used primarily for diagnostic troubleshooting. The valid ranges are also displayed. Note that these ranges are not configurable.
- **Fans:** Displays the speed (in RPM) of all fans in this MediaPort. This information is used primarily for diagnostic troubleshooting. The valid ranges are also displayed. Note that these ranges are not configurable.
- **1394 Bus Configuration:** (for MultiPorts only) By default, MultiPorts are configured to play on two buses. Click **Change to 1 Bus** only if requested by Technical Support.



**NOTE:** If you change the bus configuration, you must reboot the MediaPort in order for the changes to take effect.

Refer to “Connecting MediaPorts” in the *Spectrum System Getting Started Guide* for information regarding system balancing across 1394 buses.

- **Other Counts:** (for MediaPort 7000 series and MediaPort 5000 series with Spectrum 6.4.2 only)
  - **Cache Parity Errors:** This field appears if any cache parity error has occurred on this MediaPort. The value shown in this field indicates the number of cache parity errors that have occurred on this MediaPort.
  - **Reference:** This field indicates whether reference for this MediaPort is **Locked**, **Unlocked**, or **Unknown**.

- **Recording input check (chan A) or (chan B):** This field appears if any black frames are present in the video being recorded by this MediaPort channel, and indicates the number of black frames that are recorded.

## Configuring Simulcast Mode

The MediaPort 5400, 5500, and 7000 series are able to play out in simulcast mode, which means they can up-convert and down-convert any mix of SD and HD material to play out simultaneous SD and HD content on a single channel. In simulcast mode, SD video is up-converted to HD SDI video and HD SDI video is down-converted to SD video.

The MediaPort 5400 series operates only in simulcast mode, whereas the MediaPort 5500 and 7000 series operate in both simulcast mode and non-simulcast mode.



**NOTE:** Enabling simulcast mode on a MediaPort 5501 reduces the number of playout channels from two to one, and likewise on a MediaPort 5502 or 7000, reduces it from four to two.

In non-simulcast mode, the MediaPort up-converts or down-converts but does not play out simultaneous SD and HD content on a single channel. To switch the MediaPort 5500 series from one mode to another, open the **MediaPort Properties** page for the MediaPort 550X and, in the field for **Simulcast or Non-Simulcast Mode**, click the adjacent button to change the mode.

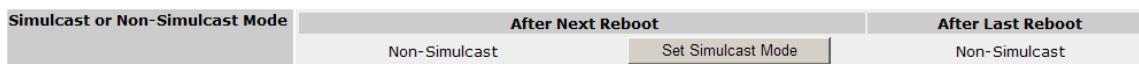


Figure 12–4: Switching between Simulcast and Non-Simulcast mode

## Configuring Subtitle Conversion

With this release of SystemManager, up converting or down converting subtitles or teletext that use the OP-47 standard is now a MediaPort-wide setting, which affects all players attached to that MediaPort. Note the following points regarding subtitle conversion:

- Subtitle conversion is only available on the MediaPort 5400, 5500, and 7000, series, which are licensed for up or down conversion.
- The subtitle conversion setting only applies to players with the PAL type of frame rate (for example, 25 Hz or 50 Hz). However, it does apply to all video formats.
- Because the subtitle conversion setting is MediaPort-wide, once it is configured, it will affect all active players attached to that MediaPort.

### To configure subtitle conversion:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the MediaPort that you want to configure. Its **MediaPort Properties** page appears.
3. In the **OP-47 subtitle to/from SD** drop down menu, select from the following:
  - **Default.** If selected, Spectrum will up convert the SD version of the subtitles. Any OP-47 packets in HD clips are down-converted to SD on the lines specified in the packets.



**NOTE:** If using the MediaPort/MediaDeck Module 5500 series, and your video source is IMX, the subtitles or teletext must be present on VBI line 21 in order for the conversion to work.

If **Default** is selected, the **Always output OP47 Packets** checkbox appears and is unchecked by default. Note the following:

- If **Always output OP-47 Packets** is left unchecked, Spectrum will only output OP-47 packets on fields where subtitles are present in the SD clip.
- If **Always output OP-47 Packets** is checked, Spectrum will output OP-47 packets regardless of whether subtitles are present in the SD clip. If there are no SD subtitles, Spectrum will output empty OP-47 packets.
- **Disable**. If selected, Spectrum will not convert OP-47 packets.
- **SD Subtitle line**. If selected, you will be able to select from a drop-down menu which VBI line (from 7-23) Spectrum will use to convert OP-47 packets.



**NOTE:** If using the MediaPort/MediaDeck Module 5500 series MediaPort or MediaDeck Module, and your video source is IMX, the subtitles or teletext must be present on VBI line 21 in order for the conversion to work.

If **SD Subtitle line** is selected, the **Always output OP-47 Packets** checkbox appears and is unchecked by default. Note the following:

- If **Always output OP-47 Packets** is left unchecked, Spectrum will only output OP-47 packets on fields where subtitles are present in the SD clip.
- If **Always output OP-47 Packets** is checked, Spectrum will output OP-47 packets regardless of whether subtitles are present in the SD clip. If there are no SD subtitles, Spectrum will output empty OP-47 packets.

See [Figure 12-5](#) for an example.



Figure 12-5: Configuring subtitle conversion—MediaPort Properties page

Once the MediaPort has been configured and you have attached a player with a PAL type of frame rate (25 or 50 Hz), the player properties page will display a field indicating that subtitle conversion is configured, and showing which VBI line has been selected. See [Figure 12-6](#).

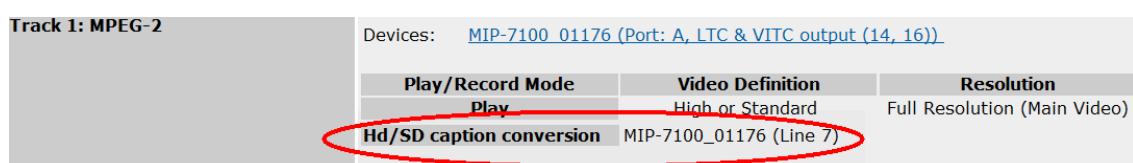


Figure 12-6: Configuring subtitle conversion—Player Properties page

## Configuring GPIO

The MediaPort 7000 provides a GPIO connector, which allows you to use an external device to control players. In order to use GPIO to control players, you must first configure the GPIO settings on the MediaPort properties page to create GPIO triggers, and then configure the GPIO settings for the attached players on their respective Player Properties pages to map the GPIO triggers to each player.

**To configure GPIO:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the MediaPort that you want to configure. Its **MediaPort Properties** page appears.
3. Click the **Edit GPIO Configuration** checkbox to enable the **GPIO Configuration** section (see [Figure 12-7](#)).

[Edit GPIO Hardware Configuration](#)

**GPIO Configuration:**

GPIO	Input/Output	Active State	Trigger On	Name
0	Output ▾	Open ▾	Activating ▾	Out_ChA
1	Input ▾	Open ▾	Active ▾	In_ChB
2	Input ▾	Closed ▾	None ▾	Foo
3	Input ▾	Open ▾	None ▾	MIP-7XXX_00412_3
4	Input ▾	Closed ▾	None ▾	MIP-7XXX_00412_4
5	Input ▾	Closed ▾	Activating ▾	MIP-7XXX_00412_5
6	Output ▾	Open ▾	None ▾	MIP-7XXX_00412_6
7	Output ▾	Open ▾	None ▾	MIP-7XXX_00412_7

[Cancel](#) [Apply](#)

**Figure 12-7: Configuring GPIO from the MediaPort Properties page**

4. In the **GPIO Configuration** section, the **GPIO** column indicates which GPI lines are configurable. For a description of where these pins are physically located on the connector, refer to the *MediaPort 7000 series Quick Reference Guide*. Identify which GPI line you wish to configure.
5. In the **Input/Output** column, select **Input** or **Output** depending on how the GPI line will be used. If
  - **Input:** If selected, a signal from the control device will generate the trigger.
  - **Output:** If selected, the player activity configured on the **Change GPI Player Configuration** page (see [Figure 12-9](#)) for the attached player will drive the signal.
6. In the **Active State** column, select Open or Closed to associate GPI line behavior with the active signal state. For outputs, this controls an internal switch to ground. For inputs, this senses the state of an external switch to ground.
  - Open: Active signal state = open switch
  - Closed: Active signal state = closed switch
7. In the **Trigger On** column select one of the following:
  - **None:** If selected, incoming signal changes do not affect the trigger. If you are configuring the GPI line for **Output**, select this option.
  - **Activating:** If selected, when the signal transitions to an active state, it generates the trigger. Select this state or **Deactivating** if you have configured the GPI line for Input and are configuring the trigger to perform one of the following: "Play Pause/Continue," "Record Start/Stop," or "Play Take Next."
  - **Deactivating:** If selected, when the signal transitions to an inactive state, it generates the trigger. Select this state or **Activating** if you have configured the GPI line for Input and are configuring the trigger to perform one of the following: "Play Pause/Continue," "Record Start/Stop," or "Play Take Next."

- **Active:** If selected, the trigger is generated and remains valid while the signal is in the active state. Select this option if you have configured the GPI line for Input and are configuring the trigger to perform a “Crash Record.” Otherwise, the crash record will not work properly.
- 8. In the **Name** column, a default GPIO trigger name is provided. If you wish to change this name, type a new GPIO trigger name in the field.

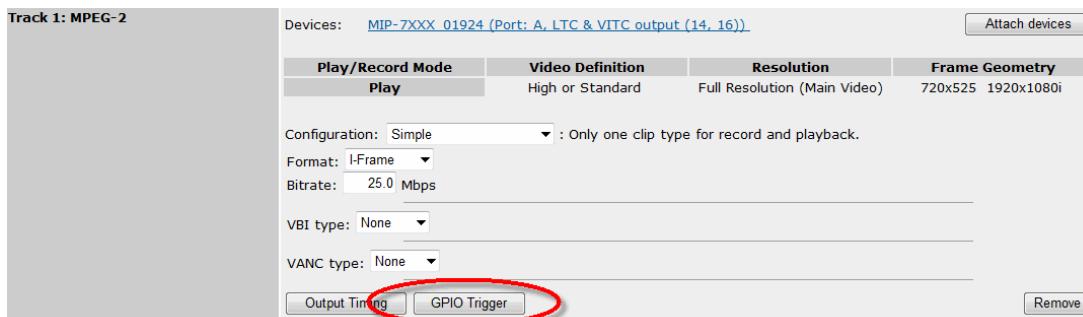


**IMPORTANT:** GPIO trigger names are global across a MediaDirector. Therefore, Harmonic highly recommends that you use unique names for all triggers on all MediaPorts connected to a single MediaDirector.

9. Repeat steps four through nine for any additional GPI lines you wish to add.
10. Click **Apply** to save your changes.

Once you have configured the GPIO settings on the MediaPort Properties page, you must then configure the GPIO settings for any players attached to that MediaPort on their respective Player Properties pages to map the GPIO triggers to each player.

11. To configure the GPIO settings for a player attached to the MediaPort 7000 series once the MediaPort has been configured for GPIO, navigate to the **Player Properties** page or **Edit Player** page for that player. A **GPIO Trigger** button will appear in the video track details as shown in *Figure 12–8*.



**Figure 12–8: Configuring GPIO from the Player Properties page**

12. Click **GPIO Trigger**. The **Change GPI settings** page appears as shown in *Figure 12–9*.

**Change GPIO Player Configuration for Input on D8\_00038**

<b>Player</b>	Input
<b>Frame Period</b>	25
<b>Track</b>	Track 1: DVCPRO 50
<b>Video Definition</b>	Standard
<b>Attached Device Name (Model)</b>	devName (MIP-7101-DMH)

**Edit GPIO Player Configuration**

**GPIs:**

Name	Function	Max Record Duration (HH:MM)	2	0
In_ChB	Crash Record			
MIP-7XXX_00412_5				

**GPOs:**

Name	Function
Out_ChA	Tally Play

**Done**      **Configure GPIO**

**Figure 12–9: Change GPI Player Configuration page**

The **Change GPI Player Configuration** page displays the player name, frame rate, video format and definition, and name of the attached MediaPort in the top section of the page.

13. Click the **Edit GPIO Player Configuration** checkbox to configure the functionality for each GPI line.
14. Edit the Trigger Mapper section as follows:
  - If you have configured a GPI line for Input, the **GPIs** fields appear as follows:
    - The **Name** column displays the name of the trigger
    - In the **Function** column, select from the following:
      - **<blank>**: If selected, the trigger ignores any signal and takes no action.
      - **Play/Pause/Continue**: If selected, the signal will cause the player to Play and then toggle between Pause and Continue with each signal. Note that, for this action, the Trigger State on the MediaPort Properties page should be set to Activating or Deactivating.
      - **Record Start/Stop**: If selected, the trigger will cause a player in the “cue record” state to go to the “record” state. It will also cause a player in the “record” state to go to the “stop” state

- Play Take Next:** If selected, the signal will cause the player to play and then advance to the next clip with each following signal. If the last clip is present the player will advance to the end of the clip. Note that, for this action, the Trigger State on the MediaPort Properties page should be set to Activating or Deactivating.
    - Crash Record:** If selected, you must also select the **Max Record Duration** in hours and minutes. The signal will cause the player to record as long as the GPI trigger is asserted or until the specified duration is reached. Note that, for this action, the Trigger State on the MediaPort Properties page should be set to Active.
    - Click **Cancel** to return to default values.
    - Click **Apply** to save settings.
- If you have configured a GPI line for Output, the following **GPOs** fields appear:
  - The **Name** column displays the name of the trigger
  - In the **Action** column select from the following
    - <blank>**: If selected, the trigger ignores any signal and takes no action.
    - Tally Play**: If selected, the player drives the GPO signal while it is playing.
    - Tally Record**: If selected, the player drives the GPO signal while it is recording.
    - Click **Cancel** to return to default values.
    - Click **Apply** to save settings.

15. Click **Done** to return to the Player Properties page.

To return to the MediaPort Properties page at any time, you can click **Configure GPIO**.

16. Perform steps 11 through 15 for all attached players.

## Changing the MediaPort Name

Renaming may help you locate MediaPorts throughout the SystemManager application.

### To change the MediaPort's name:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the MediaPort that you want to rename. Its **MediaPort Properties** page appears.
3. Click **Change Name** to display the **Change MediaPort Name** page.
4. Type the new name in the text box. Refer to [About Naming Files and System Elements](#) for proper naming conventions.
5. Click **Save** to return to the **MediaPort Properties** page.

The new name now appears in the **System** diagram, in various page titles and in other MediaPort-related fields throughout the application.

## Changing the MediaPort Description

The MediaPort description is useful in clarifying a particular MediaPort's role in your Spectrum System.

### To change the MediaPort's description:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the MediaPort whose description you want to change. Its **MediaPort Properties** page appears.

3. Click **Change Desc** to display the **Change MediaPort Description** page.
4. Type the new description in the text box.
5. Click **Save** to save the description and return to the **MediaPort Properties** page. The new description appears in the **MediaPort Description** field.

## Changing the MediaPort Wink State

**To change the MediaPort's wink state:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the MediaPort whose wink state you want to change. Its **MediaPort Properties** page appears.
3. Scroll to the bottom of the page, and check the **Wink State** line.
4. Change the MediaPort's wink state, as desired:
  - If currently On, click **Wink Off** to stop winking the MediaPort's blue light bar.
  - If currently Off, click **Wink On** to start winking the MediaPort's blue light bar.

## Rebooting the MediaPort

Located on the **MediaPort Properties** page, the reboot function is a *local* function that is not associated with the firmware upgrade process. Reboot the MediaPort when it is experiencing problems, or if you do not want to reboot the MediaPort immediately after a firmware upgrade.

**To reboot the MediaPort:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the MediaPort that you want to reboot. Its **MediaPort Properties** page appears.
3. Scroll to the bottom of the page and click **Reboot**.
4. When the **Confirmation** dialog appears, click **OK**. The MediaPort's status changes to "Rebooting," then "Not Connected," then "Configuring," and finally to "Connected." The complete process takes approximately two minutes.

You can also reboot one or more MediaPorts on the **Upgrade Firmware** page. Refer to "Upgrading Spectrum Firmware" in the *Spectrum System Installation and Hardware Reference Guide*.

## Upgrading MediaPort Firmware

Refer to "Upgrading Spectrum Firmware" in the *Spectrum System Installation and Hardware Reference Guide* for firmware upgrade instructions.

## Upgrading the MediaPort License

Every Spectrum MediaPort includes a license file. For some MediaPorts, including the 7000 series, 5220, and 5400 series, upgrading the license file also changes the model number and adds additional features and enables functionality. For example, the 5220 changes to 5320 and 5400 changes to 5500. For the MediaPort 7000, the three letter-identifier changes (for example, 7100-DVS may be upgraded to 7100-DVH). If you have purchased a new license file from Harmonic, you may upgrade your MediaPort license using SystemManager.

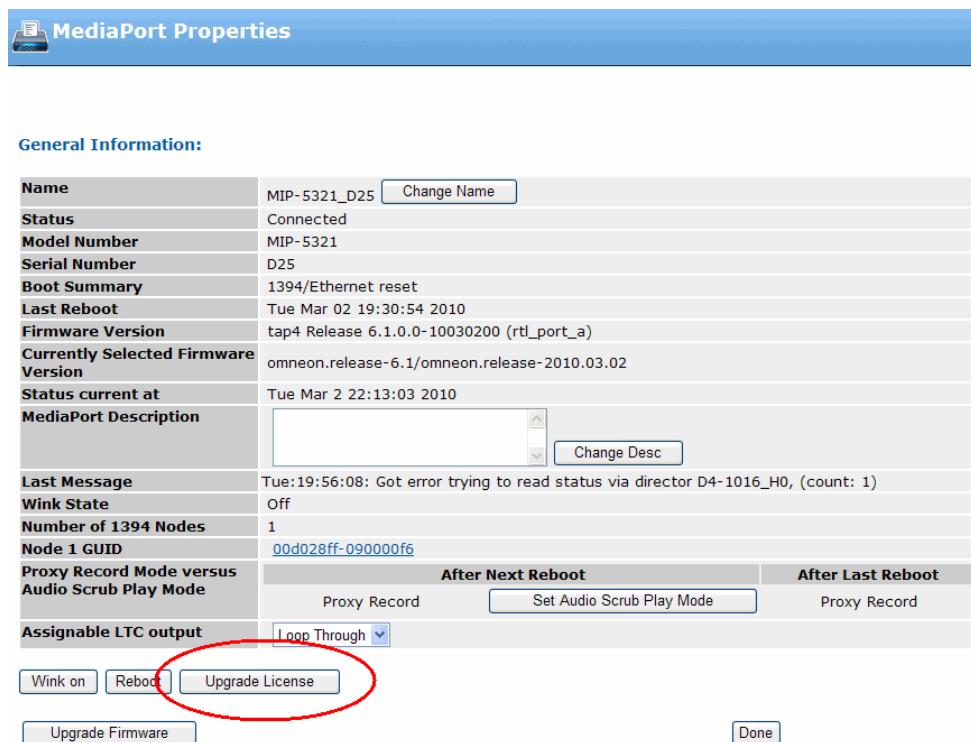
### To upgrade the MediaPort license:

1. Locate the MediaPort/MediaDeck Module license file provided to you by Harmonic. Note that the file name will have the MediaPort serial number embedded in it. For example, the license file name for a MediaPort with serial number D25 could be t4\_520x\_D25.hex.
2. Copy the license file to the SystemManager hard drive under <install drive>:\Licenses.



**NOTE:** The drive letter for <install drive> depends on which drive was selected when installing SystemManager.

3. From the **Configuration** tab in SystemManager, navigate to the **MediaPort Properties** page for the MediaPort that you wish to upgrade. Once the new license file is found for this MediaPort, an **Upgrade License** button will appear, as shown in *Figure 12-10*.



**Figure 12-10: Upgrading the MediaPort License**

4. Click **Upgrade License**.
5. Reboot the MediaPort according to the instructions in *Rebooting the MediaPort*.

If you have upgraded a MediaPort 5220 series, the **Model Number** field will now show MIP-5321. If you have upgraded a MediaPort 5400 series, the **Model Number** field will now show MIP-5501.



**NOTE:** If you have upgraded a MediaPort 7000 series, note that the three-letter identifier at the end of the model number will change. For example, a MediaPort 7100-DVS may be upgraded to a MediaPort 7100-DVH.

## Viewing MediaPort Alarms and Events

### To view MediaPort alarms and events:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click any MediaPort heading (or icon) to reach the **MediaPort Properties** page.
3. Scroll down to the bottom of the page to view any alarms or events associated with the selected MediaPort as shown in [Figure 12-11](#).

**Events**

You may clear the listed alarms by clicking this button:

You may delete the listed alarms by clicking this button:

Level	Time	Event	Info	Clear?	Delete
INFO	Thu May 22 14:06:08 2008	Found network connection to device.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Thu May 22 14:03:00 2008	MediaPort reboot.	1394 reset	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
CRIT	Thu May 22 14:02:56 2008	Lost network connection to device.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Thu May 22 09:43:30 2008	Found network connection to device.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Thu May 22 09:40:29 2008	MediaPort reboot.	1394 reset	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>

Figure 12-11: MediaPort Properties—Alarms and Events

## Configuring a MediaPort Channel for Onboard Playout Control

Please read the following configuration overview before configuring a ChannelPort channel for Onboard Playout Control. For information about Onboard Playout Control, see [About Onboard Playout Control](#).

1. In SystemManager, create the player you wish to use for OPC and configure it to use “Harmonic Playout” for Control. Refer to [Initial Player Configuration](#).
2. In SystemManager, attach the player to the MediaPort and then activate it. Refer to [Attaching Devices and Setting Conversion Options](#) and [Changing the Player State: Activating and Deactivating, Enabling and Disabling](#) for instructions.
3. In SystemManager, enable the Traffic and Billing service for the corresponding video server. Refer to [Enabling the Traffic and Billing Service](#) for instructions.
4. In SystemManager, configure the Playout Channel for the corresponding video server for Onboard Playout Control by selecting “Playout” for the Channel Type on the Playout Channel Properties page. Configure other Playout Channel settings as needed. Refer to [Configuring a Playout Channel](#) for instructions.
5. If you are using the Media Fetch service, enable Media Fetch on the Playout Channel Properties page and then configure the Media Fetch settings. Refer to [Configuring the Media Fetch Service](#).
6. Refer to the *Spectrum Onboard Playout Control and PlayoutTool User Guide* for information about creating playlists and installing and using the PlayoutTool.

# Chapter 13

## ChannelPort Configuration

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This chapter provides configuration instructions for ChannelPort modules in a Spectrum system. Choose from the following:

- [\*ChannelPort Configuration Overview\*](#)
- [\*Viewing ChannelPort Properties\*](#)
- [\*Configuring GPIO Triggers\*](#)
- [\*Configuring GPIO Settings for Players\*](#)
- [\*Configuring a ChannelPort Channel\*](#)
- [\*Changing the ChannelPort Name\*](#)
- [\*Changing the ChannelPort Description\*](#)
- [\*Changing the ChannelPort Wink State\*](#)
- [\*Rebooting the ChannelPort\*](#)
- [\*Upgrading ChannelPort Firmware\*](#)
- [\*Upgrading the ChannelPort License\*](#)
- [\*Viewing ChannelPort Alarms and Events\*](#)

### ChannelPort Configuration Overview

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

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

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

- [\*Configuring ChannelPort to Preview Graphics with FXTool and PreviewTool\*](#)
- [\*Configuring ChannelPort to Play Graphics Live On Air\*](#)
- [\*Creating the Graphics Directory on the Video Server\*](#)
- [\*Configuring a ChannelPort Channel for Onboard Playout Control\*](#)

For detailed information about using the ChannelPort tools, refer to the *Spectrum ChannelPort Tools User Guide*. For information on template authoring, refer to the *Spectrum ChannelPort Template Authoring Guide*.

### Configuring ChannelPort to Preview Graphics with FXTool and PreviewTool

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

1. Refer to the *Spectrum ChannelPort Template Authoring Guide* for information on creating graphic templates that can be played on the ChannelPort and for instructions on installing and using FXTool and PreviewTool. If you are running Spectrum 7.1 or later, continue to step 3.
2. **For systems with Spectrum 7.0 only:** Create the default graphics directory on your video server. Refer to [Creating the Graphics Directory on the Video Server](#).
3. In SystemManager, create a player and attach it to the ChannelPort. Refer to [Player Configuration](#) for instructions.
4. In SystemManager, activate the player you attached to the ChannelPort. Refer to [Changing the Player State: Activating and Deactivating, Enabling and Disabling](#) for instructions.
5. In SystemManager, configure the ChannelPort channel. Refer to [Configuring a ChannelPort Channel](#) in this chapter for instructions.
6. In SystemManager, configure the Playout Channel. Refer to [Configuring a Playout Channel](#) in for instructions.
7. Configure FXTool. Refer to “Using FXTool” in the *Spectrum ChannelPort Tools User Guide* for instructions.
8. Configure PreviewTool. Refer to “Using PreviewTool” in the *Spectrum ChannelPort Tools User Guide* for instructions.

## Configuring ChannelPort to Play Graphics Live On Air

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

1. Refer to the *Spectrum ChannelPort Template Authoring Guide* for information on creating graphic templates that can be played on the ChannelPort. If you are running Spectrum 7.1, continue to step 3.
2. **For systems with Spectrum 7.0 only:** Create the default graphics directory on your video server. Refer to [Creating the Graphics Directory on the Video Server](#).
3. In SystemManager, create a player and attach it to the ChannelPort. Refer to [Player Configuration](#) for instructions.
4. In SystemManager, activate the player you attached to the ChannelPort. Refer to [Changing the Player State: Activating and Deactivating, Enabling and Disabling](#) in this chapter for instructions.
5. In SystemManager, configure the ChannelPort channel. Refer to [Configuring a ChannelPort Channel](#) in this chapter for instructions.
6. If you are connecting ChannelPort to an EAS, refer to [Configuring a ChannelPort Channel](#) in this chapter for instructions.
7. If your automation system connects to the ChannelPort via serial port, configure the serial port settings. Refer to [Configuring a ChannelPort Channel](#) in this chapter for instructions.
8. If your automation system connects via a network connection, identify the port number using [Table 13-1](#). You will need this port number to configure your automation system.

## Configuring a ChannelPort Channel for Onboard Playout Control

Please read the following configuration overview before configuring a ChannelPort channel for Onboard Playout Control. For information about Onboard Playout Control, see [About Onboard Playout Control](#).

1. Refer to the *Spectrum ChannelPort Template Authoring Guide* for information on creating graphic templates that can be played on the ChannelPort. Refer to the *Spectrum ChannelPort Tools User Guide* for instructions on installing and using FXTool and PreviewTool.
2. In SystemManager, create the player you wish to use for OPC and configure it to use “Harmonic Playout” for Control. Refer to [Initial Player Configuration](#).

3. In SystemManager, attach the player to the ChannelPort and then activate it. Refer to [Attaching Devices and Setting Conversion Options](#) and [Changing the Player State: Activating and Deactivating, Enabling and Disabling](#).
4. In SystemManager, configure the ChannelPort channel. Refer to [Configuring a ChannelPort Channel](#) for instructions.
5. If you are connecting ChannelPort to an EAS, refer to [Configuring a ChannelPort Channel](#) for instructions.
6. In SystemManager, enable the Traffic and Billing service for the corresponding video server. Refer to [Enabling the Traffic and Billing Service](#) for instructions.
7. In SystemManager, configure the Playout Channel for Onboard Playout Control by selecting “Playout” for the Channel Type on the Playout Channel Properties page. Configure other Playout Channel settings as needed. Refer to [Configuring a Playout Channel](#).
8. If you are using the Media Fetch service, enable Media Fetch on the Playout Channel Properties page and then configure the Media Fetch settings. Refer to [Configuring the Media Fetch Service](#) for instructions.
9. Refer to the *Spectrum Onboard Playout Control and PlayoutTool User Guide* for information about creating playlists and installing and using the PlayoutTool.

## Determining a ChannelPort Port Number

If you are using a ChannelPort to preview graphics with FXTool or using it with an automation system, you will need to identify the port number for the ChannelPort channel you wish to use. Note that FXTool and automation systems use different protocols—FXTool uses “Network Automation” and most automation systems use “Serial Automation.” Refer to [Table 13–1](#) to identify the necessary port for use with FXTool or automation.

If your ChannelPort module is connected to a Spectrum MediaDeck 7000, the module on the left (when looking from the back) is com 0, and the module on the right is com1. If you are using a MediaCenter or MediaDirector, in SystemManager, navigate to the Properties page for your video server, and then scroll down to the Private Ethernet Interfaces section to view the “com” label for the associated Ethernet port. For details, refer to [Private Ethernet Interfaces](#).

Each ChannelPort module supports two channels (A and B). Once you know the Ethernet port that your ChannelPort module is connected to and the channel that you will be using, refer to [Table 13–1](#).

**Table 13–1: ChannelPort Port Numbers**

Module IP	ChannelPort Channel	Port Number for FXTool	Port Number for Automation
com 0	A	9100	9000
com 0	B	9101	9001
com 1	A	9102	9002
com 1	B	9103	9003
com 2	A	9104	9004
com 2	B	9105	9005
com 3	A	9106	9006
com 3	B	9107	9007

Module IP	ChannelPort Channel	Port Number for FXTool	Port Number for Automation
com 4	A	9108	9008
com 4	B	9109	9009
com 5	A	9110	9010
com 5	B	9111	9011
com 6	A	9112	9012
com 6	B	9113	9013
com 7	A	9114	9014
com 7	B	9115	9015
com 8	A	9116	9016
com 8	B	9117	9017
com 9	A	9118	9018
com 9	B	9119	9019
com 10	A	9120	9020
com 10	B	9121	9021
com 11	A	9122	9022
com 11	B	9123	9023
com 12	A	9124	9024
com 12	B	9125	9025
com 13	A	9126	9026
com 13	B	9127	9027
com 14	A	9128	9028
com 14	B	9129	9029
com 15	A	9130	9030
com 15	B	9131	9031

## Creating the Graphics Directory on the Video Server



**NOTE:** If you are running Spectrum 7.1, this procedure is not necessary. The graphics directory is created automatically with the video server file system.

By default, the ChannelPort looks for graphic files in gfx.dir on the video server file system. For systems running Spectrum software release 7.0, you must manually create the gfx.dir graphics directory on your video server file system. It is not created automatically.



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

**To create gfx.dir:**

1. From SystemManager, click the **Disk Utilities** icon in the left-hand column to open the **Disk Utilities** page.
2. From the **Disk Utilities** page, click the hyperlink for your video server to open the corresponding Disk Utilities page.
3. In the **Logical View** area, click **Explore Filesystem file://...,** as shown in *Figure 13-1.*

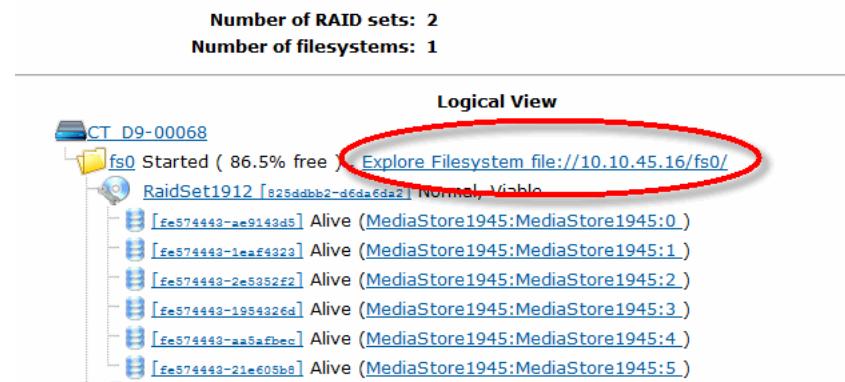


Figure 13-1: File System, Logical View

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

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

- a. From Internet Explorer, click **Tools > Internet Options > Security > Trusted Sites > Sites** to open the **Trusted sites** dialog box.
- b. In the **Add this website to the zone** field, enter your SystemManager IP address (preceded by "http://"), and then click **Add**.
- c. Click **Close** and then click **OK**. Retry the Explore Filesystem link.
5. Using Windows Explorer, create a new folder named **gfx.dir** on the root directory of the file system. See *Figure 13-2.*

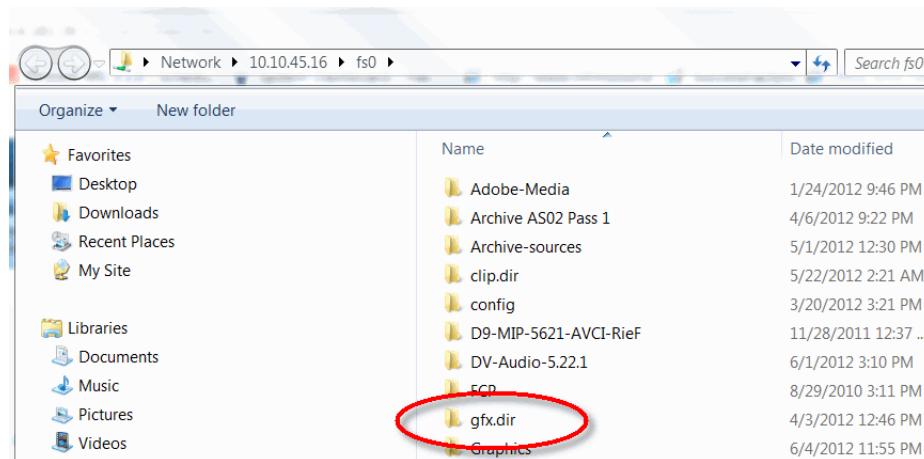


Figure 13–2: Creating gfx.dir

## Renaming the Graphics Directory Folder (Optional)

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



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

### To configure the new graphics directory folder name in SystemManager:

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

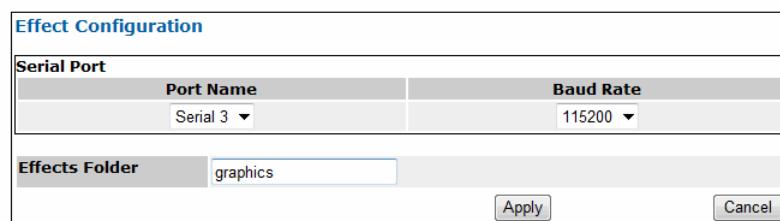


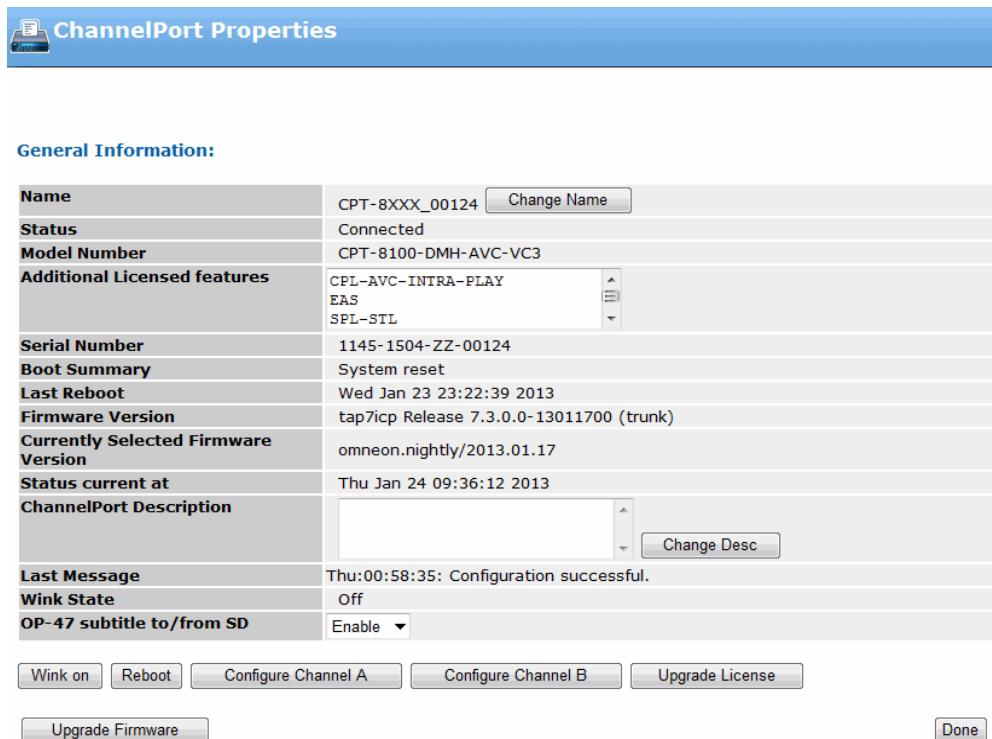
Figure 13–3: Effects Folder

5. Click **Apply**, and then click **Done**.
6. Repeat steps 3 through 5 for the remaining ChannelPort channel.

## Viewing ChannelPort Properties

Follow these steps to view ChannelPort properties:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click any ChannelPort (or icon) to open the **ChannelPort Properties** page, shown in [Figure 13-4](#).



**Figure 13–4: ChannelPort Properties**

### General Information

In the **General Information** section, you can view:

- **Name:** Displays the user-defined name given to this ChannelPort.
- **Change Name** (button): Click to rename the selected ChannelPort. Refer to [Changing the ChannelPort Name](#) for instructions.
- **Status:** Displays the current network status for the selected ChannelPort. This field is used primarily for diagnostic troubleshooting.
- **Model Number:** Lists the ChannelPort's product model number.
- **Additional Licensed features:** Lists additional licensed features for this ChannelPort. For a complete list of available licenses, refer to the *Spectrum Installation and Hardware Reference Guide*.
- **Serial Number:** Displays the ChannelPort's serial number as set at the factory.
- **Boot Summary:** Displays the reason why the last reboot of the ChannelPort occurred.
- **Last Reboot:** Displays the date and time of the last reboot of the ChannelPort.

- **Firmware Version:** Lists the current version of firmware that resides in the ChannelPort's flash memory.  
Refer to "Upgrading MediaPort or ChannelPort Module Firmware" in the *Spectrum MediaDeck 7000 User Guide* or the *Spectrum Installation and Hardware Reference Guide* for firmware upgrade instructions.
- **Currently Selected Firmware Version:** Lists the firmware version that is selected on the [Firmware Version Selection](#) page.
- **Status current at:** Lists the most recent date and time that the page was refreshed. Note that the page is automatically refreshed every 30 seconds, unless configured otherwise.
- **ChannelPort Description:** Displays a scrollable multi-line description of the selected ChannelPort. This field is useful for entering data that clarifies the specific ChannelPort's role in your system.
- **Change Desc** (button): Click to change the ChannelPort's description. Refer to [Changing the ChannelPort Description](#) for instructions.
- **Last Message:** This line displays the last error message received that deals with File System operation problems, or problems during the periodic File System check.
- **Wink State:** Describes the wink state of the ChannelPort's light bar, either On or Off. Refer to the [Wink On/Off](#) description that follows for details.
- **OP-47 subtitle to/from SD:** This field allows you to select conversion options for subtitles which use the OP-47 standard. For instructions, refer to [Configuring Subtitle Conversion](#).
- **Wink On/Off** (button): Click to change the wink state of the ChannelPort's light bar. Refer to [Changing the ChannelPort Wink State](#) for instructions.
- **Reboot** (button): Click to reboot this ChannelPort. This function is typically performed after loading new firmware. Refer to [Rebooting the ChannelPort](#) for instructions.
- **Configure Channel A** (button): click to configure Channel A of the ChannelPort module. Refer to [Configuring a ChannelPort Channel](#) for instructions.
- **Configure Channel B** (button): click to configure Channel B of the ChannelPort module. Refer to [Configuring a ChannelPort Channel](#) for instructions.
- **Upgrade Firmware** (button): click to upgrade the ChannelPort firmware. Refer to [Upgrading ChannelPort Firmware](#) for instructions.
- **Upgrade License** (button, if available): click to upgrade the ChannelPort license. Refer to [Upgrading the ChannelPort License](#) for instructions.

## GPIO/RS-422 Configuration

Check the **Edit GPIO Hardware Configuration** checkbox to configure GPIO triggers for your ChannelPort. See [Figure 13-6](#).

The GPIO/RS-422 connector on the ChannelPort module can be configured to provide control for players, graphics, or an Emergency Alert System (EAS). In order to use GPIO for player, graphics, or EAS control, you must first configure the GPIO settings on the ChannelPort properties page to create GPIO triggers. Once the triggers are created, you can map the GPIO triggers to an attached player by configuring the GPIO settings on the Player Properties page. You can map the triggers to a graphics template or EAS system by using the ChannelPort Channel Properties page. For instructions on configuring GPIO triggers, refer to [Configuring GPIO Triggers](#). For information on mapping GPIO triggers to players, refer to [Configuring GPIO Settings for Players](#). For information on mapping GPIO triggers to graphics templates or an EAS, refer to [Configuring a ChannelPort Channel](#).



## Environment

*Figure 13–5* displays the Environment section of the **ChannelPort Properties** page.

**NOTE:** The fields in the Environment section will vary depending on the ChannelPort you are viewing.

Environment:		
	Voltage Levels	
<b>Slot 1.0VA</b>	1.00 Volts	( Range: 0.90 - 1.10 )
<b>Slot 1.0VB</b>	1.00 Volts	( Range: 0.90 - 1.10 )
<b>Slot 1.8V</b>	1.79 Volts	( Range: 1.62 - 1.98 )
<b>Slot 2.5V</b>	2.50 Volts	( Range: 2.25 - 2.75 )
<b>Slot 3.3V</b>	3.28 Volts	( Range: 2.97 - 3.63 )
<b>Slot 5.0V</b>	5.12 Volts	( Range: 4.50 - 5.50 )
<b>Slot 12V</b>	12.14 Volts	( Range: 9.00 - 13.20 )
Temperatures		
<b>Slot Top Exit</b>	47 Celsius	( Range: 0 - 75 )
<b>Slot Bottom</b>	39 Celsius	( Range: 0 - 75 )
<b>Slot FPGA</b>	61 Celsius	( Range: 0 - 80 )
<b>Slot Codec0 FPGA</b>	44 Celsius	( Range: 0 - 80 )
<b>Slot CPU Temp</b>	63 Celsius	( Range: 0 - 75 )
<b>Slot Codec1 FPGA</b>	43 Celsius	( Range: 0 - 80 )

**Figure 13–5: ChannelPort Properties—Environment**

- **Voltage Levels:** Lists the current voltages of the various components. This information is used primarily for diagnostic troubleshooting. The valid ranges are also displayed. Note that these ranges are not configurable.
- **Temperatures:** Displays the current temperature (in Celsius) of the various components on the this ChannelPort. This information is used primarily for diagnostic troubleshooting. The valid ranges are also displayed. Note that these ranges are not configurable.

## Configuring GPIO Triggers

The ChannelPort provides a GPIO/RS-422 connector, which allows you to use an external device to control players or graphics or to control an EAS. In order to use GPIO to control players, graphics or an EAS, you must first configure the GPIO settings on the ChannelPort properties page to create GPIO triggers. To map those triggers to players, you must then configure the GPIO settings for the attached players on their respective Player Properties pages. To map those triggers to graphics templates or an EAS, you must configure the GPIO settings on the ChannelPort Channel Properties page.

### To configure GPIO triggers:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the ChannelPort that you want to configure. Its **ChannelPort Properties** page appears.
3. Click the **Edit GPIO Configuration** checkbox to enable the **GPIO Configuration** section (see *Figure 13–6*).

**Edit GPIO Hardware Configuration**

**GPIO Configuration:**

GPIO	Input/Output	Active State	Trigger On	Name
0	Input ▾	Open ▾	None ▾	CPT-8100_01020_0
1	Input ▾	Open ▾	None ▾	CPT-8100_01020_1
2	Input ▾	Open ▾	None ▾	CPT-8100_01020_2
3	Input ▾	Open ▾	None ▾	CPT-8100_01020_3
4	Input ▾	Open ▾	None ▾	CPT-8100_01020_4
5	Input ▾	Open ▾	None ▾	CPT-8100_01020_5
6	Input ▾	Open ▾	None ▾	CPT-8100_01020_6
7	Input ▾	Open ▾	None ▾	CPT-8100_01020_7

**Figure 13–6: Configuring GPIO from the ChannelPort Properties page**

4. In the **GPIO Configuration** section, the **GPIO** column indicates which GPI lines are configurable. For a description of where these pins are physically located on the connector, refer to the *Spectrum ChannelPort Module Quick Reference Guide*. Identify which GPI line you wish to configure.
5. In the **Input/Output** column, select **Input** or **Output** depending on how the GPI line will be used.
  - **Input:** If selected, a signal from the control device will generate the trigger.
  - **Output:** If selected and mapped to a player, the player activity configured on the **Change GPI Player Configuration** page (see [Figure 13–8](#)) for the attached player will drive the signal. If mapped to a graphics template, the setting on the ChannelPort Channel Properties page will drive the signal.
6. In the **Active State** column, select Open or Closed to associate GPI line behavior with the active signal state. For outputs, this controls an internal switch to ground. For inputs, this senses the state of an external switch to ground.
  - **Open:** Active signal state = open switch
  - **Closed:** Active signal state = closed switch
7. In the **Trigger On** column select one of the following:
  - **None:** If selected, incoming signal changes do not affect the trigger. If you are configuring the GPI line for **Output**, select this option.
  - **Activating:** If selected, when the signal transitions to an active state, it generates the trigger. Select this state or **Deactivating** if you have configured the GPI line for Input and are configuring the trigger to perform one of the following: “Play Pause/Continue,” “Record Start/Stop,” or “Play Take Next.”
  - **Deactivating:** If selected, when the signal transitions to an inactive state, it generates the trigger. Select this state or **Activating** if you have configured the GPI line for Input and are configuring the trigger to perform one of the following: “Play Pause/Continue,” “Record Start/Stop,” or “Play Take Next.”
  - **Active:** If selected, the trigger is generated and remains valid while the signal is in the active state. Select this option if you have configured the GPI line for Input and are configuring the trigger to perform a “Crash Record.” Otherwise, the crash record will not work properly.

8. In the **Name** column, a default GPIO trigger name is provided. If you wish to change this name, type a new GPIO trigger name in the field.



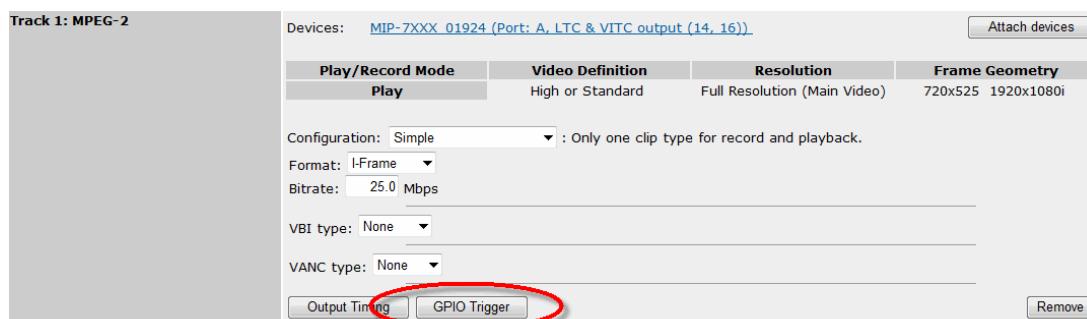
**IMPORTANT:** GPIO trigger names are global across a MediaDirector. Therefore, Harmonic highly recommends that you use unique names for all triggers on all ChannelPorts or MediaPorts connected to a single MediaDirector.

9. Repeat steps four through nine for any additional GPI lines you wish to add.
10. Click **Apply** to save your changes.

## Configuring GPIO Settings for Players

Once you have configured the GPIO settings on the ChannelPort Properties page, you must then configure the GPIO settings for any players attached to that ChannelPort on their respective Player Properties pages to map the GPIO triggers to each player.

1. To configure the GPIO settings for a player attached to the ChannelPort series once the ChannelPort has been configured for GPIO, navigate to the **Player Properties** page or **Edit Player** page for that player. A **GPIO Trigger** button will appear in the video track details as shown in *Figure 13-7*.



**Figure 13-7: Configuring GPIO from the Player Properties page**

2. Click **GPIO Trigger**. The Change GPI settings page appears as shown in *Figure 13-8*.

 Change GPIO Player Configuration for Input on D8\_00038

Player	Input	
Frame Period	25	
Track	Track 1: DVCPRO 50	
Video Definition	Standard	
Attached Device Name (Model)	devName (MIP-7101-DMH)	

Edit GPIO Player Configuration

**GPIs:**

Name	Function	Max Record Duration (HH:MM)
In_ChB	Crash Record	2 : 0
MIP-7XXX_00412_5		

**GPOs:**

Name	Function
Out_ChA	Tally Play

Cancel    Apply

Cancel    Apply

Done    Configure GPIO

Figure 13–8: Change GPI Player Configuration page

The **Change GPI Player Configuration** page displays the player name, frame rate, video format and definition, and name of the attached ChannelPort in the top section of the page.

3. Click the **Edit GPIO Player Configuration** checkbox to configure the functionality for each GPI line.
4. Edit the Trigger Mapper section as follows:
  - If you have configured a GPI line for Input, the **GPIs** fields appear as follows:
    - The **Name** column displays the name of the trigger
    - In the **Function** column, select from the following:
      - **<blank>**: If selected, the trigger ignores any signal and takes no action.
      - **Play/Pause/Continue**: If selected, the signal will cause the player to Play and then toggle between Pause and Continue with each signal. Note that, for this action, the Trigger State on the ChannelPort Properties page should be set to Activating or Deactivating.
      - **Record Start/Stop**: If selected, the trigger will cause a player in the “cue record” state to go to the “record” state. It will also cause a player in the “record” state to go to the “stop” state

- Play Take Next:** If selected, the signal will cause the player to play and then advance to the next clip with each following signal. If the last clip is present the player will advance to the end of the clip. Note that, for this action, the Trigger State on the ChannelPort Properties page should be set to Activating or Deactivating.
      - Crash Record:** If selected, you must also select the **Max Record Duration** in hours and minutes. The signal will cause the player to record as long as the GPI trigger is asserted or until the specified duration is reached. Note that, for this action, the Trigger State on the ChannelPort Properties page should be set to Active.
      - Click **Cancel** to return to default values.
      - Click **Apply** to apply settings.
    - If you have configured a GPI line for Output, the following **GPOs** fields appear:
      - The **Name** column displays the name of the trigger.
      - In the **Action** column select from the following:
        - <blank>**: If selected, the trigger ignores any signal and takes no action.
        - Tally Play**: If selected, the player drives the GPO signal while it is playing.
        - Tally Record**: If selected, the player drives the GPO signal while it is recording.
        - Click **Cancel** to return to default values.
        - Click **Apply** to apply settings.
5. Click **Done** to return to the Player Properties page.

To return to the ChannelPort Properties page at any time, you can click **Configure GPIO**.

6. Perform steps 1 through 5 for all attached players.

## Configuring a ChannelPort Channel

### To configure a ChannelPort Channel:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click any ChannelPort (or icon) to open the **ChannelPort Properties** page, shown in [Figure 13-4](#).
3. Click the **ChannelPort Channel A** or **ChannelPort Channel B** button to open the properties page for that channel, as shown in [Figure 13-9](#).

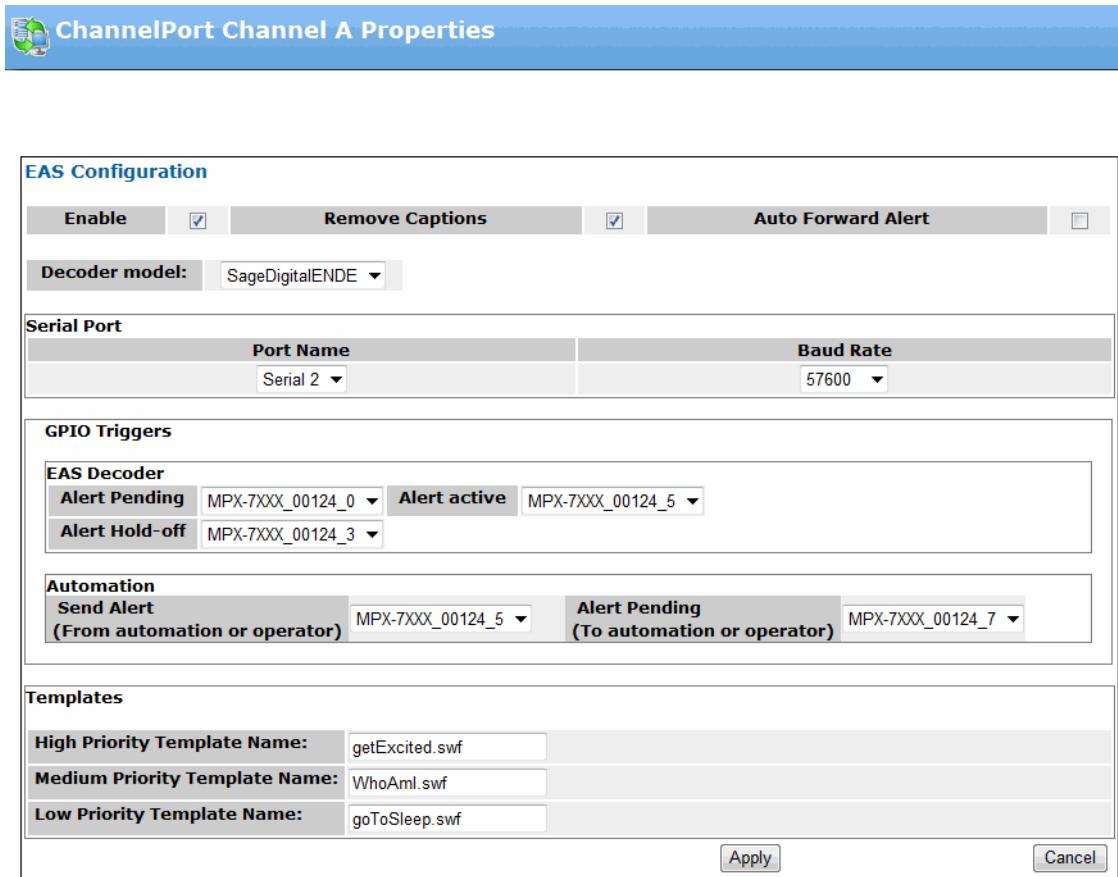


Figure 13–9: ChannelPort Channel Properties—EAS Configuration

## EAS Configuration

If you have purchased a license for EAS support for your ChannelPort, the EAS Configuration section will be enabled. Configure EAS settings as follows:

- **Enable:** Click to Enable EAS support.
- **Remove Captions:** If selected, closed captions will be turned off.
- **Auto Forward Alert:** Click if you wish automatically forward alerts once they are available.
- **Decoder model:** Select the decoder from the drop-down menu. At this time, the ChannelPort supports the Sage\* Digital ENDEC and the TFT\* EAS 911T.

In the **Serial Port** section, configure the following:

- **Port Name:** From the drop-down menu, select the Serial Port that you are using to connect to the EAS or select none. For GPIO/RS-422 connector signal assignments, refer to the *Spectrum ChannelPort Module Quick Reference Guide*.
- **Baud Rate:** From the drop-down menu, select the required Baud Rate for your EAS system. Refer to the documentation for your EAS decoder for details.

In the **GPIO triggers** section, configure the following:

- **For EAS Decoder:**

- Alert Pending:** (for Sage only) From the drop-down menu, select a trigger. This signal indicates to the ChannelPort that an alert has been received by the EAS system.
- Alert Hold-off:** (for Sage only) From the drop-down menu, select a trigger. This signal prevents an alert from being sent automatically.
- Alert active:** From the drop-down menu, select a trigger. This signal indicates that the EAS is playing an alert on air.
- **For Automation:**
  - Alert Pending (From automation or operator):** From the drop-down menu, select a trigger. This signal indicates an alert is available to be sent to automation.
  - Send Alert (To automation or operator):** From the drop-down menu, select a trigger. This signal indicates that an alert can go to air.

In the **Templates** section, configure the following:

- **High Priority Template Name:** Enter the name of the graphics template to be used for high priority alerts. The file extension is not required.
- **Medium Priority Template Name:** Enter the name of the graphics template to be used for medium priority alerts. The file extension is not required.
- **Low Priority Template Name:** Enter the name of the graphics template to be used for low priority alerts. The file extension is not required.
- **Apply (button):** Click to apply settings.
- **Cancel (button):** Click to revert to default settings.

### Effect Configuration

If you are using an automation system that connects to the ChannelPort via serial port, you must configure the settings in the **Effect Configuration** section. Refer to [Figure 13–10](#) for reference.



**Figure 13–10: ChannelPort Channel Properties—Effect Configuration**

In the **Serial Port** section configure the following:

- Port Name:** From the drop-down menu, select the Serial Port that you are using to connect to an automation system. For GPIO/RS-422 connector signal assignments, refer to the *Spectrum ChannelPort Module Quick Reference Guide*.

- Baud Rate:** From the drop-down menu, select the required Baud Rate for your automation system. Refer to the documentation for your automation system for details.
- **Effects Folder:** If the graphics directory on your video server file system is named gfx.dir, leave the Effects Folder field blank. If you have named the graphics directory on your video server file system something other than gfx.dir, you must enter the new name in the Effects Folder field. For information on creating the graphics directory, refer to [Creating the Graphics Directory on the Video Server](#).

In the **Layers (for non-.swf content)** section, you can configure the “end behavior” for non-.swf content that you load onto ChannelPort layers, which is the behavior when the graphic reaches the last frame. This section applies only to non-.swf content that you can play on the ChannelPort, including the following file types:

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



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

---

For instructions on configuring Flash Videos and MPEG-4 files to be played on a ChannelPort, refer to “Creating Flash Videos and MPEG-4 Files for ChannelPort” in the *Spectrum ChannelPort Template Authoring Guide*.



**NOTE:** When you load a graphic onto the ChannelPort, it is positioned on a layer above the main video source. Layer 1 is the bottom-most layer, while layer 8 is the top-most layer.

---

- **Layer Number:** Select a layer between 1 and 8.
- **End Behavior:** This setting describes what happens when the graphic on the selected reaches its last frame, and the graphic is still playing. For each layer, select from the following list of behaviors:
  - Still:** The last frame of the graphic on this layer will be still.
  - Loop:** The graphic on this layer will loop continuously.
  - Disappear:** The graphic on this layer will disappear.



**NOTE:** If a still image (for example, .jpg or .gif file) is loaded on the layer and Disappear is selected as the End Behavior, the image will appear for one frame and then disappear.

---

- **Remove:** Click to select the layer you wish to remove.
- **Apply (button):** Click to apply settings.
- **Cancel (button):** Click to cancel and return to default settings.

## Event Configuration

In the **Event Configuration** section, you can configure events that correspond to graphics templates to be played out on the ChannelPort. For each event, you can select the graphics layer that it appears over the video output and set the fade duration.



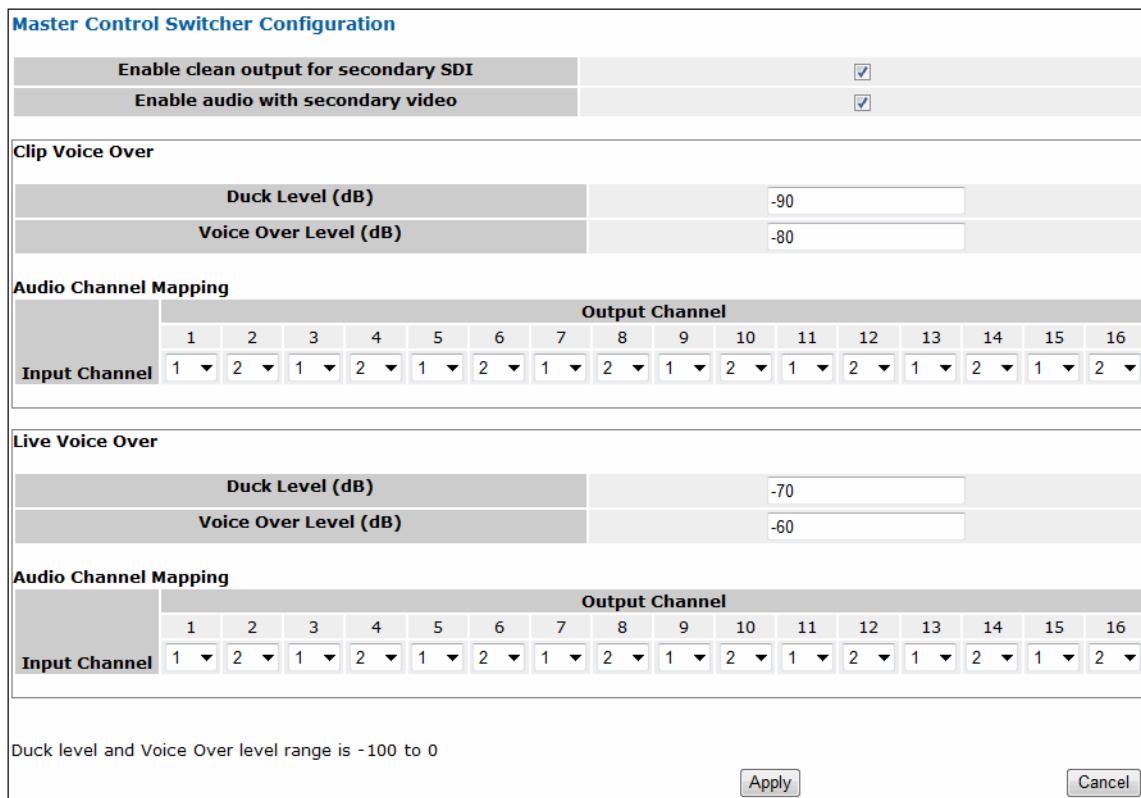
**NOTE:** When you load a graphic template, or .swf file, onto the ChannelPort, it is positioned on a layer above the main video source. Layer 1 is the bottom-most layer, while layer 8 is the top-most layer.

**Event Configuration**

<b>Events</b>			
<b>Event Name</b>	<b>Layer Number</b>	<b>Fade Duration (fields)</b>	<b>Remove</b>
MPX-XXXX_00124_5	7	27	<input type="checkbox"/>
<b>Toggle all graphics on event</b>		MPX-XXXX_00124_7	
<input type="button" value="Add Fade Layer"/>		<input type="button" value="Remove selected rows"/>	<input type="button" value="Apply"/>
		<input type="button" value="Cancel"/>	<input type="button" value="Done"/>

In the **Events** section:

- **Event Name:** From the drop-down menu, select the GPIO trigger to be used for this event.
- **Layer Number:** From the drop-down menu, select the layer associated with this event (between 1-8).
- **Fade Duration (fields):** Enter the fade duration (in fields) to be applied to this event.
- **Remove:** Click to remove the selected event.
- **Toggle all graphics on event:** From the drop-down menu, select a GPIO trigger, which will be used to toggle all graphics on or off.
- **Add Fade Layer (button):** Click to add new event. Note that you must configure the layer settings before clicking **Apply** or an error message will appear.
- **Remove selected rows (button):** Click to remove a selected event.
- **Apply (button):** Click to apply settings.
- **Cancel (button):** Click to revert to default settings.



In the **Master Control Switcher Configuration** section:

- **Enable clean output for secondary SDI:** When selected, the secondary SDI (output B) will be the output of the video AB mixer with no graphics.
- **Enable audio with secondary video:** When selected, any audio present in the secondary event video (such as a .flv or .mp4 file) will be enabled.



**IMPORTANT:** Harmonic recommends that you only enable this setting if you explicitly intend play audio with your secondary event video. Enabling audio could create unexpected results if, for example, a video secondary contained a silent audio track.

- **Clip Voice Over:** The settings in this section apply when the source is a secondary audio clip.
  - **Duck Level:** Enter the level that the program audio will be reduced.
  - **Voice Over Level:** Enter the level that the voice over audio will be reduced.
  - **Audio Channel Mapping:** Configure how the Input Channels will map to the Output Channel for the audio present in the secondary event.
- **Live Voice Over:** The settings in this section apply when the source is a live AES audio feed.
  - **Duck Level:** Enter the level that the program audio will be reduced.
  - **Voice Over Level:** Enter the level that the voice over audio will be reduced.
  - **Audio Channel Mapping:** Configure how the Input channels will map to the Output Channel for the audio present in the secondary event.
- **Apply (button):** Click to apply settings.
- **Cancel (button):** Click to revert to default settings.

- **Done (button)**: Click to return to the ChannelPort Properties page.

## Changing the ChannelPort Name

Renaming may help you locate ChannelPorts throughout the SystemManager application.

### To change the ChannelPort's name:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the ChannelPort that you want to rename. Its **ChannelPort Properties** page appears.
3. Click **Change Name** to display the **Change ChannelPort Name** page.
4. Type the new name in the text box. Refer to [About Naming Files and System Elements](#) for proper naming conventions.
5. Click **Save** to return to the **ChannelPort Properties** page.

The new name now appears in the **System** diagram, in various page titles and in other ChannelPort-related fields throughout the application.

## Changing the ChannelPort Description

The ChannelPort description is useful in clarifying a particular ChannelPort's role in your Spectrum System.

### To change the ChannelPort's description:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the ChannelPort whose description you want to change. Its **ChannelPort Properties** page appears.
3. Click **Change Desc** to display the **Change ChannelPort Description** page.
4. Type the new description in the text box.
5. Click **Save** to save the description and return to the **ChannelPort Properties** page. The new description appears in the **ChannelPort Description** field.

## Changing the ChannelPort Wink State

### To change the ChannelPort's wink state:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the ChannelPort whose wink state you want to change. Its **ChannelPort Properties** page appears.
3. Scroll to the bottom of the page, and check the **Wink State** line.
4. Change the ChannelPort's wink state, as desired:
  - If currently On, click **Wink Off** to stop winking the ChannelPort's blue light bar.
  - If currently Off, click **Wink On** to start winking the ChannelPort's blue light bar.

## Rebooting the ChannelPort

Located on the **ChannelPort Properties** page, the reboot function is a *local* function that is not associated with the firmware upgrade process. Reboot the ChannelPort when it is experiencing problems, or if you do not want to reboot the ChannelPort immediately after a firmware upgrade.

**To reboot the ChannelPort:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the ChannelPort that you want to reboot. Its **ChannelPort Properties** page appears.
3. Scroll to the bottom of the page and click **Reboot**.
4. When the **Confirmation** dialog appears, click **OK**. The ChannelPort's status changes to "**Rebooting**," then "**Not Connected**," then "**Configuring**," and finally to "**Connected**." The complete process takes approximately two minutes.

You can also reboot one or more ChannelPorts on the **Upgrade Firmware** page. Refer to "Upgrading Spectrum Firmware" in the *Spectrum System Installation and Hardware Reference Guide*.

## Upgrading ChannelPort Firmware

Refer to "Upgrading MediaPort Module and ChannelPort Firmware" in the *Spectrum MediaDeck 7000 User Guide* for firmware upgrade instructions.

## Upgrading the ChannelPort License

Every ChannelPort includes a license file. Upgrading the license file also changes the model number and enables functionality. For example, CPT-8100-DMH may be upgraded to CPT-8100-DMH-VC3P. If you have purchased a new license file from Harmonic, you may upgrade your ChannelPort license using SystemManager.

**To upgrade the ChannelPort license:**

1. Locate the ChannelPort license file provided to you by Harmonic. Note that the file name will have the ChannelPort serial number embedded in it. For example, the license file name for a ChannelPort with serial number D25 could be t4\_520x\_D25.hex.
2. Copy the license file to the SystemManager hard drive under <install drive>:\Licenses.



**NOTE:** The drive letter for <install drive> depends on which drive was selected when installing SystemManager.

3. From the **Configuration** tab in SystemManager, navigate to the **ChannelPort Properties** page for the ChannelPort that you wish to upgrade. Once the new license file is found for this ChannelPort, an **Upgrade License** button will appear, as shown in [Figure 13-11](#).

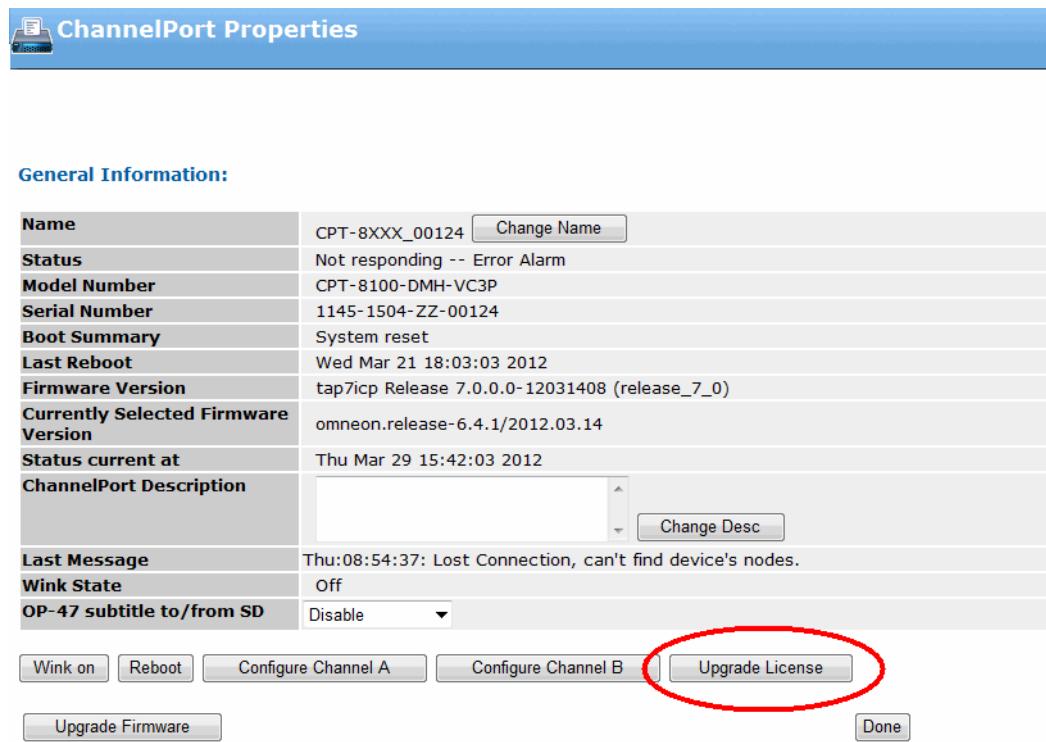


Figure 13–11: Upgrading the ChannelPort License

4. Click **Upgrade License**.
5. Reboot the ChannelPort according to the instructions in [Rebooting the ChannelPort](#).



**NOTE:** After restarting, either the three-letter identifier at the end of the model number will change or new identifiers will appear in the Additional Features field. For example, a CPT-8100-DMH may be upgraded to CPT-8100-DMH-VC3P.

## Viewing ChannelPort Alarms and Events

To view ChannelPort alarms and events:

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click any ChannelPort heading (or icon) to reach the **ChannelPort Properties** page.
3. Scroll down to the bottom of the page to view any alarms or events associated with the selected ChannelPort as shown in [Figure 13–12](#).

<b>Events</b>					
You may clear the listed alarms by clicking this button:				<input type="button" value="Clear All"/>	
You may delete the listed alarms by clicking this button:				<input type="button" value="Delete All"/>	
Level	Time	Event	Info	Clear?	Delete
INFO	Wed Mar 14 18:19:07 2012	Found network connection to device.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
CRIT	Wed Mar 14 18:07:35 2012	Lost network connection to device.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Wed Mar 14 17:45:32 2012	Found network connection to device.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
CRIT	Wed Mar 14 17:17:37 2012	Lost network connection to device.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Wed Mar 14 16:18:55 2012	Firmware upgrade finished.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Wed Mar 14 16:14:58 2012	Firmware upgrade started.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Wed Mar 14 16:12:15 2012	Firmware upgrade started.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
FAIL	Wed Mar 14 16:00:03 2012	Firmware upgrade failed.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Wed Mar 14 16:00:03 2012	Firmware upgrade started.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
FAIL	Wed Mar 14 15:42:00 2012	Firmware upgrade failed.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>

Figure 13–12: ChannelPort Properties—Alarms and Events

# Chapter 14

## Player Configuration

---

This chapter provides configuration and operation instructions for Players in a Spectrum System. Choose from the following topics:

- [\*Creating a Player\*](#)
- [\*Attaching Devices and Setting Conversion Options\*](#)
- [\*Player to Player Dubbing\*](#)
- [\*Disconnecting Devices\*](#)
- [\*Changing the Player State: Activating and Deactivating, Enabling and Disabling\*](#)
- [\*Using Auto Input Sense Recording\*](#)
- [\*Deleting Players\*](#)
- [\*Editing a Player\*](#)
- [\*Viewing Player Properties\*](#)
- [\*Adjusting Output Timing\*](#)
- [\*Creating Multiple Audio Track Players\*](#)
- [\*Moving Players\*](#)
- [\*Viewing Player Settings and Attached Devices\*](#)
- [\*Allowing Players to be Enabled or Disabled by Automation\*](#)
- [\*About the Player Utility\*](#)
- [\*About VANC Implementation in Spectrum\*](#)
- [\*About AFD Support\*](#)
- [\*About Harmonic Timecode Behavior\*](#)
- [\*About Cue-to-Timecode with VDCP Control\*](#)



**IMPORTANT:** When configuring Players on MediaDirectors 2100, 2101, 2102 and 2102B, it is important to remember that each Player is associated with a specific host, and each Player may only be connected to those MediaPorts attached to that selected host. A Player that resides on Host 0 cannot be connected to a MediaPort that resides on Host 1.

---



**NOTE:** SystemManager checks the firmware version on Spectrum or MediaDeck systems and adjusts the player configuration user interface according to the features supported in the firmware version. If the firmware version of any component on your Spectrum or MediaDeck system is too old to support this SystemManager feature, a warning message will appear in the **Player Properties** page asking you to upgrade to a supported firmware version for this release of SystemManager. Harmonic recommends that you upgrade to supported firmware versions soon after installing the latest SystemManager release.

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## Creating a Player

To create a player, follow the steps provided in [Initial Player Configuration](#) and then continue to the section that corresponds to the type of player you wish to create. This section includes the following:

- [Initial Player Configuration](#)
- [Creating a DV Player](#)
- [Creating a DVCPRO Player](#)
- [Creating a DVCPRO 50 Player](#)
- [Creating a DVCPRO HD Player](#)
- [Creating a DV MPEG SD Player](#)
- [Creating an MPEG SD Player](#)
- [Creating an MPEG HD Play only Player](#)
- [Creating an MPEG HD Record only Player](#)
- [Creating an MPEG SD Player to Demux Transport Streams and VBI Data](#)
- [Creating an MPEG HD Player to Demux Transport Streams](#)
- [Creating an Uncompressed \(SD only\) Player](#)
- [About Recording and Playing Back XDCAM HD Clips](#)
- [Creating an XDCAM HD or XDCAM EX Player](#)
- [Creating an XDCAM-HD RDD9 Player](#)
- [Creating a DNxHD/VC-3 Player](#)
- [Creating a Data Player \(DVB/ASI\)](#)
- [Creating an AVC-Intra Player](#)
- [Creating a ProRes Player](#)
- [Configuring Subtitle Insertion](#)
- [Recording Proxies with the MediaPort 5000 Series](#)
- [Recording Proxies with the MediaPort 7000 Series](#)
- [Adding Audio Tracks](#)
- [Configuring Audio Scrub](#)

### Initial Player Configuration

**To create a Player that you will associate with a MediaPort or third-party device:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. In the left-hand column, click the **Player Configuration** icon.
3. On the **Player Configuration** page, click the icon for the MediaDirector host on which you want to create the Player. The **Player List** for the selected MediaDirector host appears.
4. On the **Player List**, click **Create a Player** to display the **Create Player** page.

5. Type a name for the new Player in the text box. Note that you cannot use the same Player name twice in a Harmonic system. Refer to [About Naming Files and System Elements](#) for naming conventions.
6. Click **Create** to display the **Edit Player** page.
7. Using the drop-down menu, enter the Player's specific configuration:
  - Select the desired **Mode**: **Play Only**, **Record Only**, or **Play and Record**.



**NOTE:** For the MediaPort 6320, 6220, and 6100 series, alternating between Record and Play modes will result in video errors at the beginning of the very first recording or the first playout, and result in errors in the log. Subsequent recordings or playout will not have the corruption or errors in the log.

- Select the desired **Frame Rate**: **25**, **29.97**, **50**, or **59.94**.

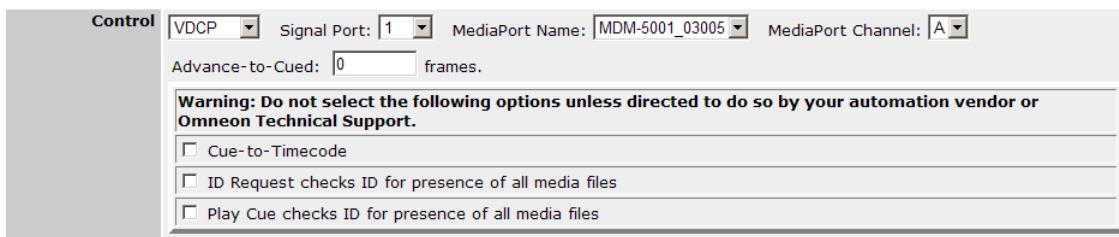


**NOTE:** If you plan on doing cross conversion with this player, refer to [About Configuring for Cross Conversion](#) before selecting the frame rate.



**NOTE:** If you select either 50 or 59.94, then only DVCPRO HD or MPEG video tracks, as well as Audio and Data tracks can be added. The other track type options will be grayed out.

- Select the desired method of **Control**: **Harmonic Playout**, **Manual**, **VDCP**, **OmniBus**, or **BVW**.
  - If **Harmonic Playout** is selected, the player will use the Onboard Playout Control for control. For information on Onboard Playout Control, see [About Onboard Playout Control](#).
  - If **Manual** or **OmniBus** is selected, there are no additional choices for control.
  - If **VDCP** control is selected, select as follows:
    - **Signal Port**: Choose the port number that you want to control. Select from **0** to **127**.
    - **MediaPort Name**: Select the desired MediaPort you want to receive serial control commands.
    - **MediaPort Channel**: Select the desired MediaPort channel. In versions of SystemManager prior to 5.10.1, channel A was automatically used for control.
    - **Advance-to-Cued**: Enter the minimum number of frame times the VDCP port should still be on reaching the end of a clip and before advancing to the beginning of the next cued clip. The **Advance-to-Cued** option can be used in conjunction with the player **Last-Frame-Freeze** option. Setting the **Last-Frame-Freeze** option to a non-zero value "N" causes the output to go black after freezing on the last frame of the active clip for N frames. If the **Advance-to-Cued** option is set to a value "M" where M is larger than N, then the output will go black after N frames of freezing on the last frame and then advance to the cued clip after another M-N frames.
    - The following options should not be selected unless directed by your automation vendor or Technical Support:
      - **Cue-to-Timecode**. For information on "Cue to Timecode," refer to [About Cue-to-Timecode with VDCP Control](#)
      - **ID Request checks ID for presence of all media files**
      - **Play Cue checks ID for presence of all media files**



**Figure 14-1: Control – VDCP**

- ❑ If **BVW** is selected, select as follows:
  - ❑ **MediaPort Name**: Select the desired MediaPort you want to receive serial control commands.
  - ❑ **MediaPort Channel**: Select the desired MediaPort channel. In versions of SystemManager prior to 5.10.1, channel A was automatically used for control.



**NOTE:** The MediaPort receiving serial control commands does not have to be the same MediaPort that plays or records media.

- Select the desired **Timecode Display: Non-Drop Frame** or **Drop Frame**. Note that this selection only applies to 525/29.97 or 1080i/29.97 or 525/29.97 or 720p/59.94, Players. The default setting is **Drop Frame**.
- (If required), select the **Record Timecode Source**: Select **External** to specify that the timecode should be obtained from an external source. Select **Internal (TCG on)** to specify that the timecode should be obtained from the server's Timecode Generator.
- (If required), select the **Playback Timecode Source**: Select **From Clip** to specify that the timecode should be obtained from the clip. Select **Internal (TCG on)** to specify that the timecode should be obtained from the server's Timecode Generator. The default setting is **From Clip**.

When either **Record** or **Playback Timecode Source** is set to **Internal (TCG on)**, an additional set of options are available to configure timecode generation. Choose from the following:

- ❑ **Timecode Generator Mode**:
  - ❑ **Hold** allows you to maintain timecode generation at a constant value specified using the Player API.
  - ❑ **Free Run** specifies a continuous increase in value, starting from a value specified using the Player API.
  - ❑ **Locked to Player Timeline** specifies that the timecode value is derived from the current position on the timeline.
  - ❑ **Locked to Clip Position** specifies that the timecode is derived from the current position within the current clip.
  - ❑ **Locked to Clip's First Timecode** specifies that the timecode is derived from the current clip's first timecode value.
  - ❑ **Locked to VITC input reference** specifies that the timecode is derived from the reference input Vertical Interval Timecode (VITC).



**NOTE:** When "Play and Record" Players are configured for Internal Timecode Generator and Locked to Clip Timecode, recorded clips are produced with starting times of 00:00:00.00 with VITC times from the original source, not 00:00:00.00.



**NOTE:** For the MediaDirector 2202/2201, if a LTC timecode source is connected, the MediaDirector automatically uses that as the timecode source for any attached player. This setting overrides the reference VITC from the 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 would not override the reference for a player configured with a frame rate of 29.97 Hz.

Refer to [About Harmonic Timecode Behavior](#) for additional details about Harmonic timecode usage.

- Enter the desired **Last Frame Freeze**. 0 indicates the last frame will be frozen until the next clip.
- If required, select the **EE Mode**: **Normal**, **Never**, or **Record**. The default is **Normal**.
  - **Normal**: when selected, the input video for the player is displayed in the video out (or video loop-through) whenever the player is stopped.
  - **Never**: when selected, the input video for the player is never displayed in the video out (or video loop-through) regardless of the player state.
  - **Record**: when selected, the input video for the player is displayed in the video out (or video loop-through) only when the player is recording.
- For Spectrum systems running 6.4.2, if you have configured a **Record** player or a **Play or Record** player, the following check boxes appear:
  - **Stop recording when disk is full**: Unchecked by default. Select if you wish players to stop recording when there is no disk space.
  - **Stop recording when Input error occurs**: Unchecked by default. Select to allow players to continue recording even when there is no disk space.

To change these settings for existing players created prior to SystemManager 5.23 and Spectrum 6.4.2, first deactivate the player then change these settings, and then reactivate the player.

To change these settings for all players in your system created with SystemManager 5.23 or later and Spectrum 6.4.2 or later, use the **Player Parameters** settings on the **Options** page. See [Configuring Players to Stop Recording When the Disk Is Full](#) and [Configuring Players to Stop Recording When an Input Error Occurs](#).

- Select the **Media Wrapper Format**: **QuickTime (Reference)**, **QuickTime (Self-Contained)**, **MXF OP1a (Standard)**, **MXF OP1a (Standard, Low Latency)**, **MXF OP1a (Internal-eVTR, Low Latency)**, **MXF OP1b (External)**, **MXF AS-02 2009**, **MXF AS-02 2011**, **MXF OP1a (SMPTE RDD9)**, **MXF OP1a (Internal, early Sony style XDCAM-HD RDD9)**, or **GXF** (for playout only). The default media wrapper format is **QuickTime Reference**.

For information on supported track and media wrapper format combinations, refer to *Spectrum Media and Wrapper Formats* included in the Spectrum documentation suite.

### Important Notes on MXF OP1a Wrapper Formats

For MXF OP1a wrapper formats, note the following important points:

- **MXF OP1a (Internal-eVTR, Low Latency)** only appears if the selected Frame Rate is 25 or 29.97.
- **MXF OP1a (Standard, Low Latency)** only appears if the selected Mode includes Record, and the MediaDirector/MediaDeck firmware is 5.1 or later.
- For players using either the **MXF OP1a (Internal-eVTR, Low Latency)** wrapper or the **MXF OP1a (SMPTE RDD9)** wrapper, the video track and first audio track will not display a **Remove** button unlike other players. This is to ensure that there is at least one video track.

and one audio track. To remove the video and audio track, change the wrapper to something other than MXF OP1a (Internal-eVTR, Low Latency) or MXF OP1a (SMPTE RDD9). The Remove button will reappear.

### Important Notes on the MXF AS-02 2011 Wrapper Format

For **MXF AS-02 2011**, note the following important points:

- AS-02 2011 allows you to treat a directory as a clip. To take advantage of this feature, Spectrum provides two modes that can be used for record players. When you select **MXF AS-02 2011** for a record player, an additional drop-down menu appears. If you select the default option, “**when recording, create subdirectory with .mxf extension**,” only directories with a “.mxf” extension will be treated as clips. If you select “**when recording, create subdirectory with no extension**,” any directory present in a player’s active directory will be treated as a clip regardless of name or extension. However, “.dir” is a reserved directory extension (that is, “clip.dir” will never be seen as a clip).



**IMPORTANT:** If you select “when recording, create subdirectories with no extension,” make sure you do not store non-clip directories within a player’s active directory. Doing so may result in automation systems treating a directory as a clip and inadvertently deleting it.

- Spectrum only supports Simple AS-02 2011 Bundles (that is, single op1b files in a package).
- Modifying an AS-02 2011 Bundle via access of the OP1b wrapper directly will treat the clip as AS-02 2009, which will not update the manifest .xml file. This can cause the AS-02 2011 bundle to be invalid.

### Important Notes on the GXF Wrapper Format

For the **GXF** wrapper format, note the following important points:

- At this time, Spectrum supports only playout of GXF-wrapped content, not record.
  - Spectrum supports GXF for the following media types:
    - MPEG-2: 525, 625 and 720p, 1080i
    - DV25 and DVC PRO 50: 525, 625
    - DVC PRO HD
    - AVC-Intra
  - When selecting VBI or VANC for a video track with the GXF wrapper, note that the field name may appear as **VBI**, **VANC**, or **VBI/VANC** depending on attached MediaPort and track type. In all cases, select **GXF Data Track** to play out VBI or VANC data.
8. Harmonic recommends that you leave the **Default Clip Directory** field empty. This action allows the MediaDirector to determine the default location for clips.



**NOTE:** Changing the Player’s Clip Directory using Windows ClipTool will not affect the Clip Directory that is used by other ClipTools, nor will it affect the Clip Directory used by control applications (for example, VDCP, OmniBus, BVW, etc.).

If you choose a *different* default directory, it must have been previously created, and the full path name must be used (for example, **/fs0/mydirectory**) in the **Default Clip Directory** field. To create directories on the MediaDirector’s File System, ensure that you have first mapped the MediaDirector’s File System to a network drive. Once this is done, directories can be created in the normal way. The MediaDirector expects directory names to be separated using forward slashes (‘/’), not backward slashes as used within Microsoft Windows.

Refer to [Mapping a Spectrum Video Server File System to a Windows Network Drive](#) for complete instructions on mapping network drives.

9. For any player that is configured with a Mode of Play Only or Play and Record and a Frame Rate of 25 Hz, if you attach a MediaPort 7000 series or ChannelPort that supports up/down conversion, a checkbox for **Use 704 Up/Down Conversion** will appear. Select this option to up-convert or down-convert to output that is 704 samples wide rather than 720 samples wide. To make this the default selection for all new players, refer to [Configuring Players to Use 704 Up/Down Conversion By Default](#).
10. For any player that is configured with a Mode of Play Only or Play and Record, a checkbox for **Ignore clip RP-186 AFD** will appear. Select this option to ignore RP186 (chroma LSB) AFD data on clips being played out. To make this the default selection for all new players, refer to [Configuring Players to Ignore RP186 \(Chroma LSB\) AFD](#).
11. Select **Frame Still** to cause material that is stilled (or frozen) during playout to be a frame rather than a single field. Stilled playout includes cued mode, play at rate of zero, and when the player position hits the end of the timeline).  
Note that a frame-still provides higher spatial resolution but at the cost of motion artifacts if there is much motion between the pair of fields that comprise the frame.

12. In the **Subtitle Handling** field, you may select from the following options:
  - **Disable Conversion/Insertion:** Disables the conversion or insertion of subtitle information.
  - **Up-convert to SMPTE-2031/Down-convert:** Up-converts or down-converts subtitles to SMPTE-2031. This option is only available if the player is configured for 25 or 50 Hz frame rate.
  - **Up-convert to OP-47 /Down-convert:** Up-converts or down-converts subtitles to OP-47. This option is only available if the player is configured for 25 or 50 Hz frame rate.
  - **Onboard Subtitle Insertion:** Inserts subtitle information in the player. This option is only available if the player is configured for 25 or 50 Hz frame rate. If you have purchased the subtitle insertion license for this channel, the **Configure Caption** button will be activated. For instructions on configuring subtitle insertion, refer to [Configuring Subtitle Insertion](#).
13. To choose one (or more) video tracks for the Player, refer to the following procedures:

- [Creating a DV Player](#)
- [Creating a DVCPRO Player](#)
- [Creating a DVCPRO 50 Player](#)
- [Creating a DVCPRO HD Player](#)
- [Creating a DV MPEG SD Player](#)
- [Creating an MPEG SD Player](#)
- [Creating an MPEG HD Play only Player](#)
- [Creating an MPEG HD Record only Player](#)
- [Creating an MPEG SD Player to Demux Transport Streams and VBI Data](#)
- [Creating an MPEG HD Player to Demux Transport Streams](#)
- [Creating an Uncompressed \(SD only\) Player](#)
- [Creating an XDCAM HD or XDCAM EX Player](#)
- [Creating an XDCAM-HD RDD9 Player](#)

- [Creating a DNxHD/VC-3 Player](#)
- [Creating a Data Player \(DVB/ASI\)](#)
- [Creating an AVC-Intra Player](#)
- [Creating a ProRes Player](#)



**NOTE:** You can add tracks of different video formats to the same Player (for example, one DV 25 track plus one 10-bit SDI track). Starting with release 4.3, you can add additional tracks of the same video format to the same Player if the formats are either DV 25, DVCPRO 50, or MPEG 25 I-Frame.



**IMPORTANT:** When creating a Player, any values you enter or options you select must be supported by the MediaPort to which the Player will be attached. If the Player is configured with unsupported values or options, once you try to attach the MediaPort to the Player, an error message will appear.

14. Once you select the video format, continue with [Adding Audio Tracks](#). If you add an audio track by mistake, click the **Remove** button adjacent to the track.

## Creating a DV Player

**To add a DV (25 Mbps) track with two channels of embedded audio to the Player:**

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.
2. Click **DV 25** to add a DV video track to the Player.
3. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

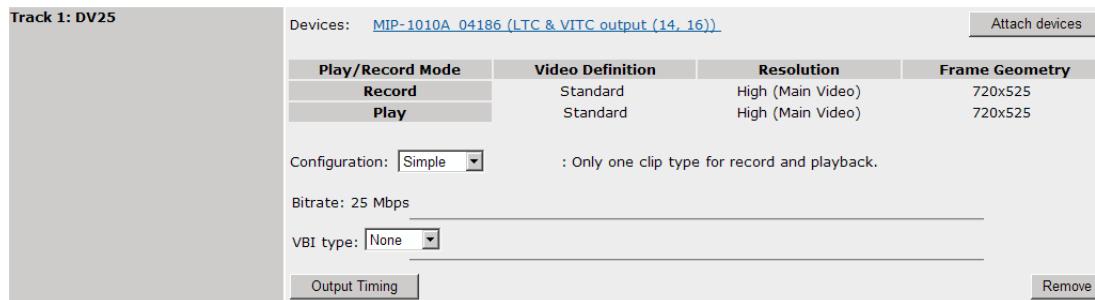
DV 25 tracks may be connected to the following MediaPorts:

- MediaPort 1001a, 1003a or 1010a series for recording/playing on SDI feeds.
- MediaPort 6221/6321
- MediaPort 5001/5002.
- MediaPort 5401/5402
- MediaPort 5501/5502
- MediaPort 7100 (DVS, DMS, DVH, DMH)
- MediaPort 7101 (DMH)
- MediaPort 7300 (DMH)
- MediaPort 7301 (DMH)
- MediaPort 7600 (UVP, APR)
- MediaPort 7601 (APR)
- ChannelPort (DMH) for play only



**NOTE:** In SystemManager, MediaPort 5XX2 models appear as two separate "MIP-5XX1" devices.

4. From the **Configuration** drop-down menu, choose between the **Simple**, **Advanced**, or **Advanced Back to Back** configuration.
  - The **Simple** configuration in [Figure 14-2](#) programs a DV 25 Player that records and plays back only a *single type* of clip.

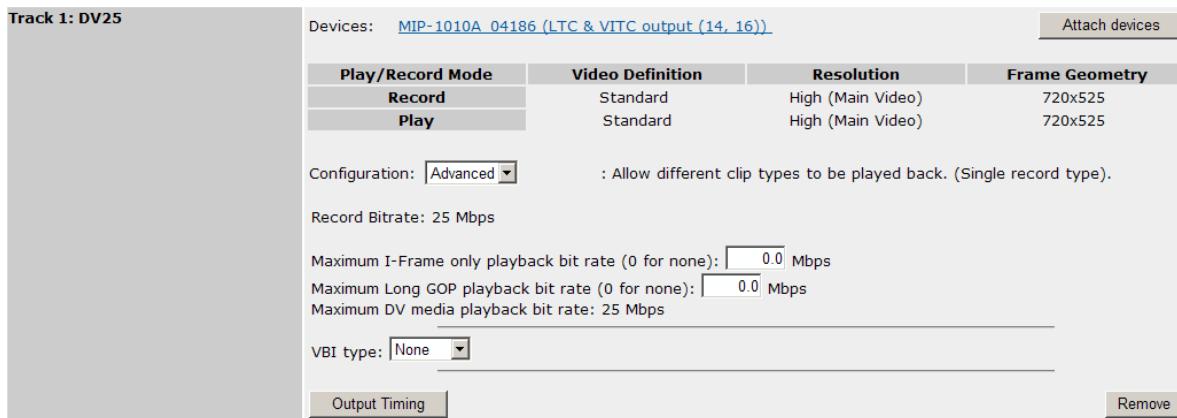


**Figure 14–2: Creating a DV Player—Simple Configuration**

If you select **Simple**, the Player records and plays back a single type of clip only. No other configuration is necessary. Please continue to [Step 5](#).

- Depending on the attached MediaPort, you may configure the player as **Advanced** or **Advanced Back to Back**. An **Advanced** player can switch between different types of clips, such as DV/DVC PRO and MPEG-2. But, in order to switch, you must first stop the player, eject the clip(s) from the timeline and then load the new format clips. An **Advanced Back to Back** player can playback a mix of clip types without having to stop.

The **Advanced** configuration in [Figure 14–3](#) programs a DV 25 Player that records a single type of clip but plays back *different types* of DV, DVC PRO, or MPEG clips.



**Figure 14–3: Creating a DV Player—Advanced Configuration**

If you select **Advanced** or **Advanced Back to Back**, the player records a single type of clip but plays back *different types* of DV, DVC PRO, or MPEG clips. Configure as follows according to Player mode:

- Play only** or **Play and Record** mode:
- Set the I-Frame playback rate in the **Maximum I-Frame only playback bitrate...** field. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. For no I-Frame playback, enter 0.
- Set the Long GOP playback rate in the **Maximum Long GOP playback bitrate...** field. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System*

*Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. For no Long GOP playback, enter 0.

- Select the clip type from the **Maximum DV media playback bitrate...** drop-down menu. If no DV media types are to be played back, select **None**. If using DV 25 or DVCPro media only, select **25 Mbps**. If using DVCPro 50 media, select **50 Mbps**.
  - Record Only** mode: No additional configuration is needed.
5. As required, click **DV 25** again to add more DV tracks to the Player. This procedure would be required, for example, if you wanted one Player to handle more than one signal, such as a key signal and a fill signal simultaneously.

If you added a video track by mistake, click the **Remove** button adjacent to the track.

6. If the video definition of the track is Standard or both High and Standard, the **VBI Type** drop-down menu will appear. To preserve VBI data, you may select **VBI File**.

For the MediaPort 1xxx, 5xxx, and 7xxx series, if the Media Wrapper Format is MXF OP1a (Standard) or MXF OP1a (Standard, Low Latency), you may also select **SMPTE 436M Track**.

If the player is configured to record, a series of eight drop-down boxes appears. Select the lines that you wish to record. A minimum of one must be selected, otherwise the Player cannot be activated.

Note that the VBI line selection only affects recording. When clips are played back, all VBI lines that were previously recorded will be inserted into the outgoing signal.

7. As required, add an additional video track of the same or different format.



**NOTE:** Since release 4.3, support is provided for Players which have two attached video tracks of the same format (DV 25, DVCPro 50, or MPEG 25 I-Frame).

or:

Continue by adding an audio track. Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.

## Creating a DVCPro Player

### To add a DVCPro (25 Mbps) video track:

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.
2. Click **DVCPro** to add a DVCPro 25 video track to the Player.
3. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

DVCPro tracks may be connected to the following MediaPorts:

- MediaPort 1001a, 1003a, or 1010a series for recording/playing material on SDI.
- MediaPort 1002 for recording/playing material on SDI feeds.
- MediaPort 6221/6321
- MediaPort 5001/5002
- MediaPort 5401/5402
- MediaPort 5501/5502
- MediaPort 7100 (DVS, DMS, DVH, DMH)
- MediaPort 7101 (DMH)

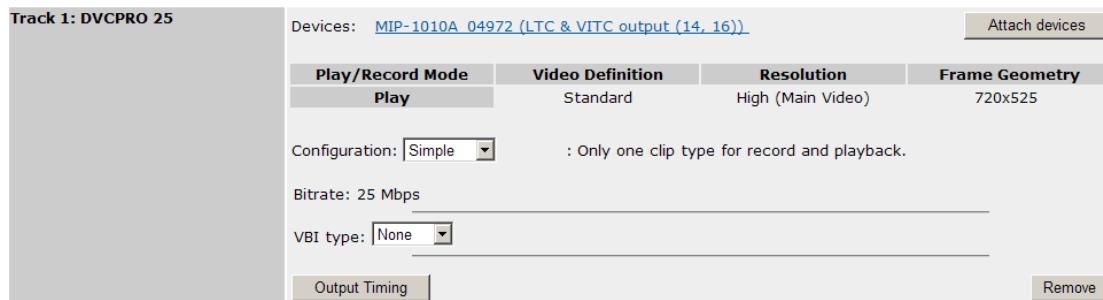
- MediaPort 7300 (DMH)
- MediaPort 7301 (DMH)
- MediaPort 7600 (UVP, APR)
- MediaPort 7601 (APR)
- ChannelPort (DMH) for play only



**NOTE:** In SystemManager, MediaPort 5XX2 series appear as two separate "MIP-5XX1" devices.

Refer to "About SDI and SDTI within the Harmonic System" in the *Spectrum System Installation and Hardware Reference Guide* for an explanation of how material "carried" within SDTI may be recorded and played back using the MediaPort 1002.

4. From the **Configuration** drop-down menu, choose between the **Simple**, **Advanced**, or **Advanced Back to Back** configuration.
- The **Simple** configuration in [Figure 14–4](#) programs a DVC PRO 25 Player that records and plays back only a *single type* of clip.

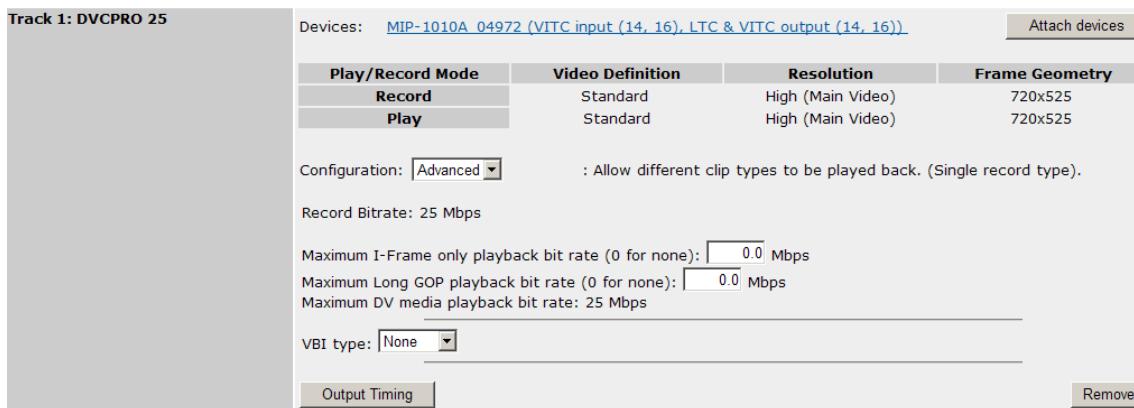


**Figure 14–4: Creating a DVC PRO 25 Player—Simple Configuration**

If you select **Simple**, the Player records and plays back a single type of clip only. No other configuration is necessary. Please continue to [Step 5](#).

- Depending on the attached MediaPort, you may configure the Player as **Advanced** or **Advanced Back to Back**. An **Advanced** Player can switch between different types of clips, such as DV/DVC PRO and MPEG-2. But, in order to switch, you must first stop the Player, eject the clip(s) from the timeline and then load the new format clips. An **Advanced Back to Back** Player can playback a mix of clip types without having to stop.

The **Advanced** configuration in [Figure 14–5](#) programs a DVC PRO 25 Player that records a single type of clip but plays back *different types* of DV, DVC PRO, or MPEG clips.



**Figure 14–5: Creating a DVCPRO 25 Player—Advanced Configuration**

If you select **Advanced**, the Player records a single type of clip but plays back *different types* of DV, DVCPRO, or MPEG clips. Configure as follows according to Player mode:

- ❑ **Play only or Play and Record mode:**
  - ❑ Set the I-Frame playback rate in the **Maximum I-Frame only playback bitrate...** field. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. For no I-Frame playback, enter 0.
  - ❑ Set the Long GOP playback rate in the **Maximum Long GOP playback bitrate...** field. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. For no Long GOP playback, enter 0.
  - ❑ Select the clip type from the **Maximum DV media playback bitrate...** drop-down menu. If no DV media types are to be played back, select **None**. If using DV 25 or DVCPRO media only, select **25 Mbps**. If using DVCPRO 50 media, select **50 Mbps**.
- ❑ **Record Only mode:**

An **Xfer Speed** drop-down box appears only when the mode is set to "Record Only" and only when the Frame Rate is set to "29.97". Select between 1x and 4x. When set to 1x, the track may only be connected to DV/MPEG MediaPorts for normal speed ingest of SDI material, or to the SDI/SDTI MediaPort for 1x ingest of DVCPRO material carried over SDTI. When set to 4x, the track may only be connected to the SDI/SDTI MediaPort for 4x ingest of DVCPRO material carried over SDTI.

5. As required, click **DVCPRO** again to add more DVCPRO tracks to the Player.

If you added a video track by mistake, click the **Remove** button adjacent to the track.

6. If the video definition of the track is Standard or both High and Standard, the **VBI Type** drop-down menu will appear. To preserve VBI data, you may select **VBI File**.

For the MediaPort 1xxx, 5xxx, and 7xxx series, if the Media Wrapper Format is MXF OP1a (Standard) or MXF OP1a (Standard, Low Latency), you may also select **SMPTE 436M Track**.

If the player is configured to record, a series of eight drop-down boxes appears. Select the lines that you wish to record. A minimum of one must be selected, otherwise the Player cannot be activated.

Note that the VBI line selection only affects recording. When clips are played back, all VBI lines that were previously recorded will be inserted into the outgoing signal.

7. As required, add a video track of a *different* format, or continue by adding an audio track.

Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.

## Creating a DVCPRO 50 Player

**To add a DVCPRO 50 (Mbps) video track with four channels of embedded audio to the Player:**

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.
2. Click **DVCPRO 50** to add a DVCPRO 50 video track to the Player.
3. Connect the track to the appropriate MediaPorts. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

DVCPRO 50 tracks may be connected to the following MediaPorts:

- MediaPort 1001a, 1003a, or 1010a series for recording/playing material on SDI.
- MediaPort 6221/6321
- MediaPort 5001/5002
- MediaPort 5401/5402
- MediaPort 5501/5502
- MediaPort 7100 (DVS, DMS, DVH, DMH)
- MediaPort 7101 (DMH)
- MediaPort 7300 (DMH)
- MediaPort 7301 (DMH)
- MediaPort 7600 (UVP, APR)
- MediaPort 7601 (APR)
- ChannelPort (DMH) for play only

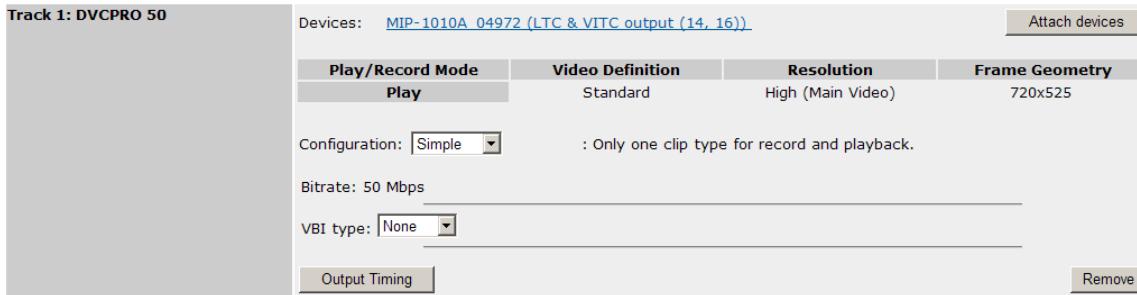


**NOTE:** In SystemManager, MediaPort 5XX2 series appear as two separate "MIP-5XX1" devices.

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Refer to "About SDI and SDTI within the Omneon System" in the *Spectrum System Installation and Hardware Reference Guide* for a detailed explanation of SDTI and the MediaPort 1002.

4. From the **Configuration** drop-down menu, choose between the **Simple**, **Advanced**, or **Advanced Back to Back** configuration.
- The **Simple** configuration in [Figure 14–6](#) programs a DVCPRO 50 Player that records and plays back only a *single type* of clip.

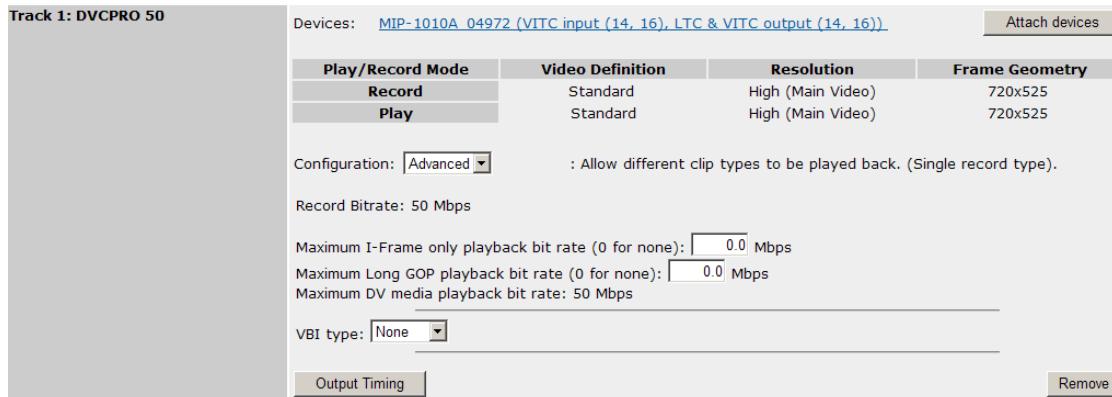


**Figure 14–6: Creating a DVCPRO 50 Player—Simple Configuration**

If you select **Simple**, the Player records and plays back a single type of clip only. No other configuration is necessary. Please continue to [Step 5](#).

- Depending on the attached MediaPort, you may configure the Player as **Advanced** or **Advanced Back to Back**. An **Advanced** Player can switch between different types of clips, such as DV/DVCPRO and MPEG-2. But, in order to switch, you must first stop the Player, eject the clip(s) from the timeline and then load the new format clips. An **Advanced Back to Back** Player can playback a mix of clip types without having to stop.

The **Advanced** configuration in [Figure 14–7](#) programs a DVCPRO 50 Player that records a single type of clip but plays back *different types* of DV, DVCPRO, or MPEG clips.



**Figure 14–7: Creating a DVCPRO 50 Player—Advanced Configuration**

If you select **Advanced** or **Advanced Back to Back**, the Player records a single type of clip but plays back *different types* of DV, DVCPRO, or MPEG clips. Configure as follows according to Player mode:

- Play only** or **Play and Record** mode:
  - Set the I-Frame playback rate in the **Maximum I-Frame only playback bitrate...** field. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. For no I-Frame playback, enter 0.
  - Set the Long GOP playback rate in the **Maximum Long GOP playback bitrate...** field. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. For no Long GOP playback, enter 0.

- Select the clip type from the **Maximum DV media playback bitrate...** drop-down menu. If no DV media types are to be played back, select **None**. If using DV 25 or DVCPro media only, select **25 Mbps**. If using DVCPro 50 media, select **50 Mbps**.
    - Record Only** mode: No additional configuration is needed.
5. As required, click **DVCPro 50** again to add more DVCPro 50 tracks to the Player. This procedure would be required, for example, if you wanted one Player to handle more than one signal, such as a key signal and a fill signal simultaneously.

If you added a video track by mistake, click the **Remove** button adjacent to the track to delete it.
  6. If the video definition of the track is Standard or both High and Standard, the **VBI Type** drop-down menu will appear. To preserve VBI data, you may select **VBI File**.

For the MediaPort 1xxx, 5xxx, and 7xxx series, if the Media Wrapper Format is MXF OP1a (Standard) or MXF OP1a (Standard, Low Latency), you may also select **SMPTE 436M Track**.

If the player is configured to record, a series of eight drop-down boxes appears. Select the lines that you wish to record. A minimum of one must be selected, otherwise the Player cannot be activated.

Note that the VBI line selection only affects recording. When clips are played back, all VBI lines that were previously recorded will be inserted into the outgoing signal.
7. As required, add an additional video track of the same or different format or continue by adding an audio track. Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.



**NOTE:** From release 4.3, support is provided for Players which have two attached video tracks of the same format (DV 25, DVCPro 50, or MPEG 25 I-Frame).

## Creating a DVCPro HD Player

### To add a DVCPro HD (100.0 Mbps) track:

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.

If you are connecting the MediaPort 6101 to this player, note the following important points:

- From the **Mode** menu, Harmonic recommends that you select either **Play Only** or **Record Only**.
- If you are configuring this player to **Record**, in the **EE Mode** menu, select **Record**. If you are configuring this player to **Play**, in the **EE Mode** menu, select **Never**.



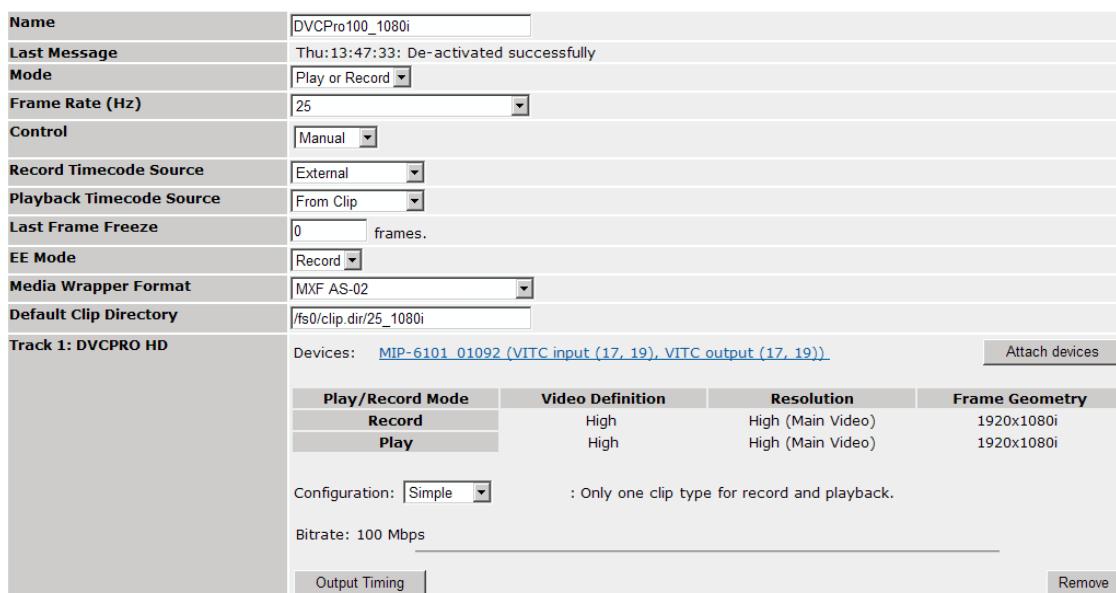
**NOTE:** For the MediaPort 6101, EE Mode cannot be set to Normal. If you attempt to set it to Normal, an error message appears.

2. Click **DVCPro HD** to add a DVCPro HD video track to the Player.
3. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

DVCPro HD tracks may be connected to the following MediaPorts:

- MediaPort 6101
- MediaPort 6321
- MediaPort 1002 for recording/playing material on SDI
- MediaPort 5401, 5402
- MediaPort 5501, 5502

- MediaPort 7100 (DVH, DMH)
- MediaPort 7101 (DMH)
- MediaPort 7300 (DMH)
- MediaPort 7301 (DMH)
- MediaPort 7600 (UVP, APR)
- MediaPort 7601 (APR)
- ChannelPort (DMH) for play only



**Figure 14–8: Creating a DVCPRO HD Player**

If you added a video track by mistake, click the **Remove** button adjacent to the track.

4. As required, add a video track of a *different* format, or continue by adding an audio track. Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.

## Creating a DV MPEG SD Player

**To create a Player which can play DV and MPEG video tracks back to back:**

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.
2. Click **MPEG-2** to add an MPEG video track to the Player.
3. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

DV MPEG SD tracks may be connected to the following MediaPorts:

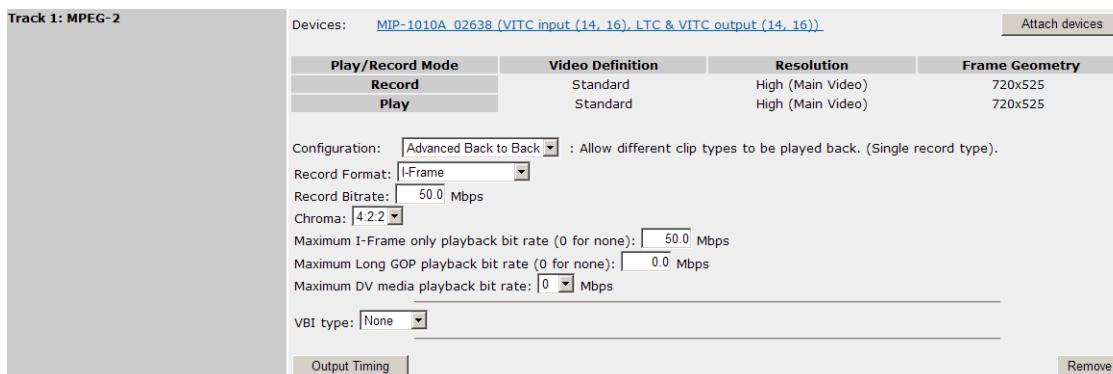
- MediaPort 1001a, 1003a, 1010a
- MediaPort 5001/5002
- MediaPort 5401/5402
- MediaPort 5501/5502
- MediaPort 7100 (DMS, DMH)

- MediaPort 7101 (DMH)
- MediaPort 7300 (DMH)
- MediaPort 7301 (DMH)
- MediaPort 7600 (UVP, APR)
- MediaPort 7601 (APR)
- ChannelPort (DMH) for play only



**NOTE:** In SystemManager, MediaPort 5XX2 series appear as two separate "MIP-5XX1" devices.

4. From the **Configuration** drop-down box, select **Advanced Back to Back** as shown in [Figure 14–9](#).



**Figure 14–9: Creating a DV MPEG SD Player**



**NOTE:** Advanced Back to Back is only available on MPEG base video tracks.

5. From the **Record Format** drop-down box, select from **I-Frame**, **Long GOP**, or **IMX**.

When Long GOP is selected as the record format, you can select **Enable Open GOP** if you wish to record Open GOP.

6. Both **Play Only** and **Play and Record** Player Modes are supported for DV MPEG Players. Depending on the Mode selected, proceed as follows:

- **Play and Record mode:**

- From the **Format** drop-down menu, choose the required format: **I-Frame**, **Long GOP**, or **IMX**.
- In the **Bitrate** field specify a valid bitrate for the selected format. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*.
- Select the required **Chroma** setting. Choose from **4:2:2** or **4:2:0**.
- In the **Maximum I-Frame playback bitrate...** field, enter the desired maximum decoding bitrate. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.
- In the **Maximum Long GOP playback bitrate...** field, enter the desired maximum decoding bitrate. For a description of valid bitrates for your MediaPort, refer to the

*Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.

- ❑ In the **Maximum DV media playback bitrate...** drop-down menu, select the maximum bandwidth of DV type media you expect to play back. If using DV 25 or DVC PRO media only, choose **25 Mbps**. If using DVC PRO 50 media, choose **50 Mbps**.
- **Play Only** mode:
  - ❑ From the **Format** drop-down menu, select the required format: **I-Frame**, **Long GOP**, or **IMX**.
  - ❑ In the **Maximum I-Frame only playback bitrate** field, enter the desired maximum decoding bitrate. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.
  - ❑ In the **Maximum Long GOP playback bitrate** field, enter the desired maximum decoding bitrate. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.
  - ❑ In the **Maximum DV media playback bitrate...** drop-down menu, choose the maximum bandwidth of DV type media you expect to play back. If using DV 25 or DVC PRO media only, choose **25 Mbps**. If using DVC PRO 50 media, choose **50 Mbps**.
- 7. If the video definition of the track is Standard or both High and Standard, the **VBI Type** drop-down menu will appear. If you want to preserve or play back VBI data, select **VBI File** or **Internal**.

A DV MPEG Player cannot include embedded VBI. However, if the VBI data option is selected, the Player can play back both separate and embedded VBI, if embedded VBI is present.

For the MediaPort 1xxx, 5xxx, and 7xxx series, if the Media Wrapper Format is MXF OP1a (Standard) or MXF OP1a (Standard, Low Latency), you may also select **SMPTE 436M Track**.



**NOTE:** For clips created with non-Harmonic equipment, Harmonic recommends that you select **Internal**.

If the player is configured to record, a series of eight drop-down boxes appears. Select the lines that you wish to record. A minimum of one must be selected, otherwise the Player cannot be activated.

For the MediaPort 5xxx and 7xxx series, if you are also configuring VANC, note that the following selections reduce the number of available VBI lines:

- If the player frame rate is 29.97 Hz, this reduces available VBI lines by one.
- If VITC capture is selected from the Attach Devices page, this reduces available VBI lines by two.
- Line 21 Closed Captioning reduces available VBI lines by one.

Note that the VBI line selection only affects recording. When clips are played back, all VBI lines that were previously recorded will be inserted into the outgoing signal.

- 8. If you want to preserve or playback VANC data, select an option from the **VANC type** drop-down menu. Depending on your wrapper format, you may select **Internal** or **SMPTE 436M Track**.



**IMPORTANT:** Avoid selecting VANC for SD video without assistance from Technical Support.



**NOTE:** SMPTE 436M is only available for MXF clips, and is only supported on the MediaPort 53xx, 52xx, 5400, 5500, and 7xxx series for playout with SD material.

In the **Maximum number of VANC data** field, enter the desired bytes per frame value. For more information about VANC for SD video, contact Technical Support.

VANC capture adjustments (number of bytes) can be controlled for the MediaPort 5320, 5400, 5500, and 7000 series only. Adjusting the number of bytes for other MediaPorts is not supported.

9. Continue by adding an audio track. Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.

## Creating an MPEG SD Player

Use this procedure to add an MPEG video track (with selectable bitrates) to a Player for SD output. An MPEG Player cannot include embedded audio.

### To add an MPEG SD Player:

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.
2. Click **MPEG-2** to add an MPEG video track to the Player.
3. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

MPEG tracks may be connected to the following MediaPorts:

- MediaPort 1001a for recording material from an SDI feed in I-frame only format, and for playing back any MPEG material to an SDI feed.
- MediaPort 1003a for recording material from an SDI feed in I-frame only, or Long GOP format, and for playing back any MPEG material to an SDI feed.



**NOTE:** MediaPort models 1003 and 1003A record MPEG in a variety of I-Frame-only and Long GOP configurations. When configured to record 4:2:2 Long GOP MPEG, the continuous record duration (including any time in CueRecord mode) for one or more clips on the timeline must not exceed 6 hours.

- MediaPort 1010a for recording material from an SDI feed in I-frame only, Long GOP, or IMX format, and for playing back any MPEG material to an SDI feed.
- MediaPort 1002 for recording and playing only IMX material on SDTI-CP feeds.



**NOTE:** Refer to "SDI and SDTI within the Harmonic System" in the *Spectrum System Installation and Hardware Reference Guide* for an explanation of how material "carried" within SDTI may be recorded and played back using the MediaPort 1002.

- MediaPort 3003 and 3006 for playing MPEG-2 material across multiple channels.
- MediaPort 4010 for recording MPEG-2 SD and HD material.
- MediaPort 4001/4002 for playing MPEG-2 SD and HD material.
- MediaPort 4101/4102 for playing MXF IMX and MPEG-2 SD and HD material.



**NOTE:** MXF IMX is supported by creating a player with one of the MXF wrapper formats, choosing MPEG IMX 30/40/50 and attaching the MediaPort 4101 or 4102, as described in [Attaching Devices and Setting Conversion Options](#).

- MediaPort 5001/5002 for recording and playing MPEG-2 SD material.

- MediaPort 5221, and 5222 for recording and playing SD IMX or MPEG-2 SD material.
- MediaPort 5321, and 5322 for recording and playing SD and HD IMX, or MPEG-2 SD and HD material.



**NOTE:** For the MediaPort 5320 series, if you selected **Record Only** or **Play and Record** for the **Mode**, make sure that, in the **Video Definition** drop-down menu, **Standard** is selected.



**NOTE:** Attempting to encode MPEG-2 Long GOP video which contains difficult content, such as "strobe" or heavily flashing lights, at a bit rate of 18 Mb/s, may result in encoder errors on the MediaPort 5320 series. These errors may include video artifacts when the recorded content is played back.

- MediaPort 5401 and 5402 for playing SD and HD IMX, or MPEG-2 SD and HD material.

For details about Up Conversion or Down Conversion options, refer to step 8 of [Attaching Devices and Setting Conversion Options](#).

- MediaPort 5501/5502 for playing SD and HD IMX, or MPEG-2 SD and HD material.

For details about Up Conversion or Down Conversion options, refer to step 8 of [Attaching Devices and Setting Conversion Options](#).

- MediaPort 7100 (M2S, M2H, DMH, DMS) for playing MPEG-2 SD material.

- MediaPort 7101 (DMH) for playing MPEG-2 SD material.

- MediaPort 7300 (M2H, DMH) for recording and playing MPEG-2 SD material.

- MediaPort 7301 (M2H) for recording and playing MPEG-2 SD material.

- MediaPort 7600 (UVP, APR) for playing MPEG-2 SD material.

- MediaPort 7601 (APR) for playing MPEG-2 SD material.

For details about Up Conversion or Down Conversion options, refer to step 8 of [Attaching Devices and Setting Conversion Options](#).

- ChannelPort (M2H) for play only

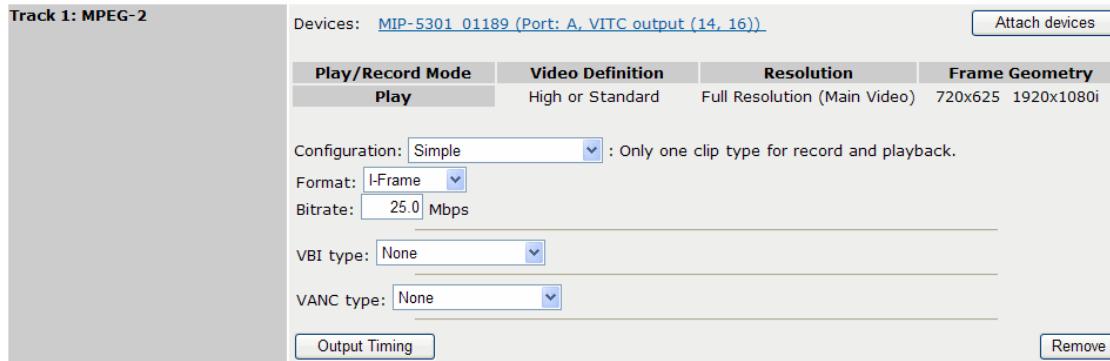


**NOTE:** In SystemManager, all MediaPort 5XX2 series appear as two separate "MIP-5XX1" devices.



**NOTE:** If the attached MediaPort does not support the selected player settings, then the following message appears: "Specified combination of video parameters is not supported by the attached device." For a description of valid formats and bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*.

4. From the **Configuration** drop-down box, select between the **Simple**, **Advanced**, or **Advanced Back to Back** configuration.
- The **Simple** configuration in [Figure 14-10](#) allows you to design an MPEG Player that records and plays back only a *single type* of MPEG clip.

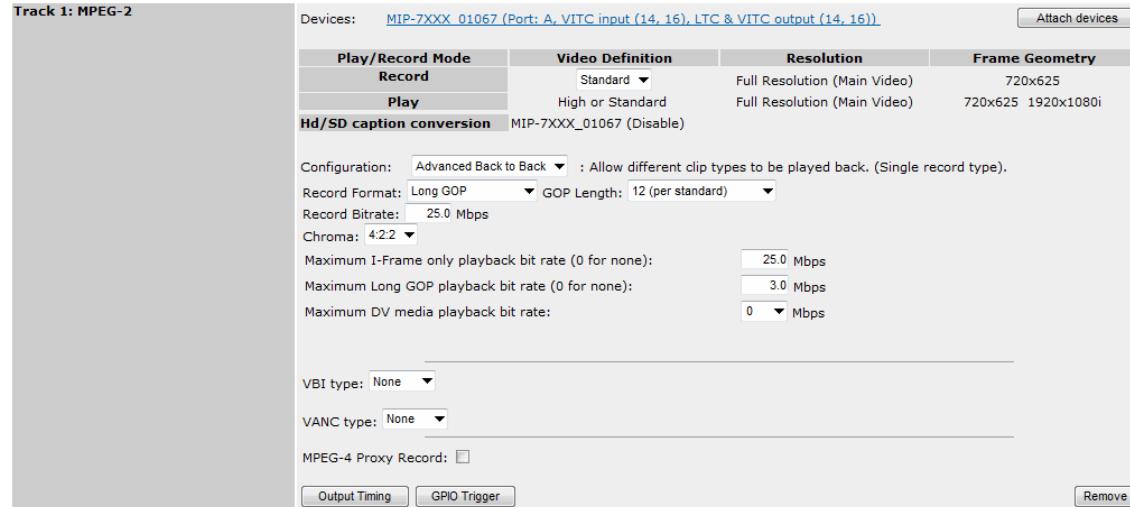


**Figure 14–10: Creating an MPEG SD Player—Simple Configuration**

Clip type is selected using the **Format** or **Record Format** field. The bitrate for both the encoded and the decoded clip must be the same.

- Depending on the attached MediaPort, you may configure the Player as **Advanced** or **Advanced Back to Back**. An **Advanced** Player can switch between different types of clips, such as DV/DVC PRO and MPEG-2. But, in order to switch, you must first stop the Player, eject the clip(s) from the timeline and then load the new format clips. An **Advanced Back to Back** Player can playback a mix of clip types without having to stop.

The **Advanced Back to Back** configuration in *Figure 14–11* allows you to design an MPEG Player that records and plays back *different types* of MPEG and DV clips



**Figure 14–11: Creating an MPEG SD Player—Advanced Configuration**

The encoded clip type is selected using the **Record Format** field, and the decoded clip types are selected using two **Playback Bitrate** fields; one for **I-Frame** only clips and one for **Long GOP** clips. With this configuration, you can play back clips that were encoded at different bitrates. However, by supporting different playback bitrates, the Player utilizes a larger IEEE 1394 bandwidth.



**NOTE:** The Advanced or Advanced Back to Back configuration page changes based on the selected Player Mode: If **Play and Record** is selected, both the **Record Bitrate** and **Playback Bitrate** fields appear. If **Record Only** is selected, only the **Record Bitrate** field appears. If **Play Only** is selected, only the **Playback Bitrate** fields appear.

5. Depending on the configuration selected, proceed as follows:

- If you selected **Simple**, in the **Format** or **Record Format** and **Bitrate** fields, choose the required format and specify a bitrate for that format. Continue to [Step 6](#). For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.



**NOTE:** When Long GOP is selected as the record format, and the selected frame rate is 25Hz, the **GOP Length** drop-down menu appears. You may select a GOP length of 12 (recommended) or 15.



**NOTE:** When Long GOP is selected as the record format, you can select **Enable Open GOP** if you wish to record Open GOP.

- If you selected **Advanced** or **Advanced Back to Back**, your entries now depend on the Player mode:
  - **Play and Record** mode:
    - In the **Record Format** and **Bitrate** field choose the required format and specify a bitrate for that format.



**NOTE:** When Long GOP is selected as the record format, and the selected frame rate is 25Hz, the **GOP Length** drop-down menu appears. You may select a GOP length of **12 (per standard)** or **15 (not recommended)**.



**NOTE:** When Long GOP is selected as the record format, if you wish to record Open GOP, you can select **Enable Open GOP**.

- In the **Maximum I-Frame only playback bitrate...** fields, enter the desired maximum decoding bitrate. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.
- In the **Maximum Long GOP playback bitrate...** field, enter the desired maximum decoding bitrate. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.
- In the **Maximum DV media playback bitrate...** drop-down menu, choose the maximum bandwidth of DV type media you expect to play back. If using DV 25 or DVCPRO media only, choose **25 Mbps**. If using DVCPRO 50 media, choose **50 Mbps**.
- **Record Only** mode:
  - In the **Record Format** and **Bitrate** fields, choose the required format and specify a bitrate for that format.



**NOTE:** When Long GOP is selected as the record format, and the selected frame rate is 25Hz, the **GOP Length** drop-down menu appears. You may select a GOP length of **12 (per standard)** or **15 (not recommended)**.



**NOTE:** When Long GOP is selected as the record format, if you wish to record Open GOP, you can select **Enable Open GOP**.

- **Play Only** mode:
  - In the **Maximum I-Frame playback bitrate...** field, enter the desired maximum decoding bitrate. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.
  - In the **Maximum Long GOP Bitrate** field, enter the desired maximum decoding bitrate. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.
  - In the **Maximum DV media playback bitrate...** drop-down menu, choose the maximum bandwidth of DV type media you expect to play back. If using DV 25 or DVCPRO media only, choose 25 Mbps. If using DVCPRO 50 media, choose 50 Mbps.
- 6. Select the required **Chroma** setting. Choose from **4:2:2** or **4:2:0**.
- 7. If the video definition of the track is Standard or both High and Standard, the **VBI Type** drop-down menu will appear. If you want to preserve or play back VBI data, from the **VBI Type** drop-down menu, select either **Internal** or **VBI File**.

For the MediaPort 1xxx, 5xxx, and 7xxx series, if the Media Wrapper Format is MXF OP1a (Standard) or MXF OP1a (Standard, Low Latency), you may also select **SMPTE 436M Track**.



**NOTE:** For clips created with non-Harmonic equipment, Harmonic recommends that you select **Internal**.

If the player is configured to record, a series of eight drop-down boxes appears. Select the lines that you wish to record. A minimum of one must be selected, otherwise the Player cannot be activated.

For the MediaPort 5xxx and 7xxx series, if you are also configuring VANC for SD video, note that the following selections reduce the number of available VBI lines:

- If the player frame rate is 29.97 Hz, this reduces available VBI lines by one.
- If VITC capture is selected from the Attach Devices page, this reduces available VBI lines by two.
- Line 21 Closed Captioning reduces available VBI lines by one.

Note that the VBI line selection only affects recording. When clips are played back, all VBI lines that were previously recorded will be inserted into the outgoing signal.

- 8. If you want to preserve or playback VANC data, select an option from the **VANC type** drop-down menu. Depending on your wrapper format, you may select **Internal** or **SMPTE 436M Track**.



**IMPORTANT:** Avoid selecting VANC for SD video without assistance from Technical Support.



**NOTE:** SMPTE 436M is only available for MXF clips, and is only supported on the MediaPort 53xx, 52xx, 5400, 5500, and 7xxx series for playout with SD material.

In the **Maximum Number of VANC** data field, enter the desired bytes per frame value. For more information about VANC for SD video, contact Technical Support.

VANC capture adjustments (number of bytes) can be controlled for the MediaPort 5320, 5400, and 5500, and 7000 series only. Adjusting the number of bytes for other MediaPorts is not supported.



**NOTE:** Depending on the attached MediaPort and the MediaPort settings, an option for **MPEG-1 Proxy Record** (for 'Record Only' or 'Play and Record' players) may be available. For information about recording proxies, see [Recording Proxies with the MediaPort 5000 Series](#).

9. As required, add an additional video track of the same or different format.



**NOTE:** Since release 4.3, support is provided for Players which have two attached video tracks of the same format (MPEG 25 I-Frame). However, you may experience a slight delay when such a Player loads and syncs. For best performance, Harmonic recommends that Players with two video tracks of the same format only be attached to MediaPorts which have the A appendage in the model number; for example, MediaPort 1001A, 1003A, or 1010A.

or:

Continue by adding an audio track. Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.

## Creating an MPEG HD Play only Player

Use this procedure to add an MPEG video track (with selectable bitrates) to a Player for HD output. Note that an MPEG Player cannot include embedded audio.

### To create an MPEG HD play only Player:

1. Ensure that the first six steps in [Creating an MPEG SD Player](#) are complete.
2. Click **MPEG-2** to add an MPEG video track to the Player.
3. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

MPEG tracks may be connected to the following MediaPorts for HD playout:

- MediaPort 4001, 4002, 4010, and 4102
- MediaPort 5321/5322

For the MediaPort 5320 series, make sure that, in the **Video Definition** drop-down menu, **High** is selected.

- MediaPort 5401/5402
- MediaPort 5501/5502
- MediaPort 7100 (M2H, DMH)
- MediaPort 7101 (DMH)
- MediaPort 7300 (M2H, DMH)
- MediaPort 7301 (M2H)
- MediaPort 7600 (UVP, APR)

- MediaPort 7601 (APR)
- ChannelPort (M2H) for play only

To select up-conversion or down-conversion options, refer to step 8 of [Attaching Devices and Setting Conversion Options](#).



**NOTE:** In SystemManager, all MediaPort 5XX2 series appear as two separate "MIP-5XX1" devices.

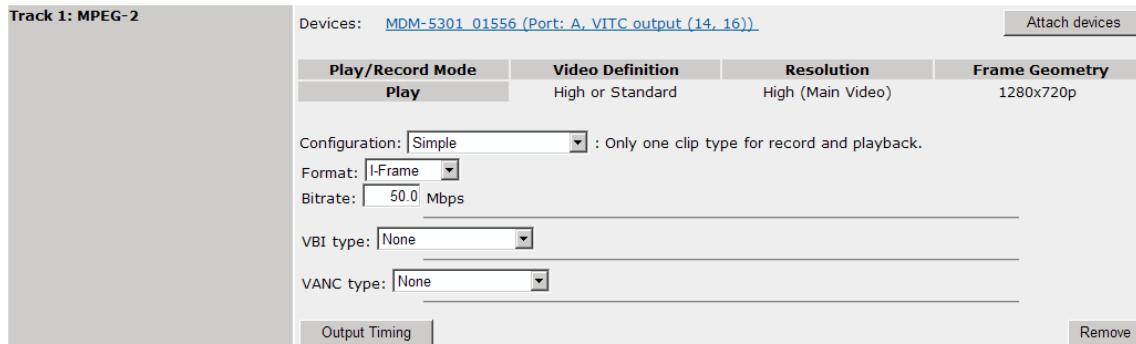


Figure 14–12: MPEG HD Play only player

4. If you want to preserve or play back VBI data, select an option from the **VBI Type** drop-down menu: **Internal**, **VBI File**, or **SMPTE 436M Track** (options will vary based on wrapper format).



**NOTE:** For clips created with non-Harmonic equipment, Harmonic recommends that you select **Internal** or **SMPTE 436M Track**.



**NOTE:** SMPTE 436M is only available for MXF clips, and is only supported on the MediaPort 3000, 4000, 4100, 5320, 5400, 5500, and 7xxx series with playout.



5. If you want to preserve or playback VANC data, select an option from the **VANC Type** drop-down menu. Depending on your wrapper format, you may select **Internal** or **SMPTE 436M Track**.
- NOTE:** SMPTE 436M is only available for MXF clips, and is only supported on the MediaPort 53xx, 52xx, 5400, 5500, 3000, 4000, 4100, and 7xxx series with playout.

In the **Maximum number of VANC data** field, enter the desired bytes per frame value. For more information about VANC, refer to [About VANC Implementation in Spectrum](#).

VANC capture adjustments (number of bytes) can be controlled for the MediaPort 5320, 5400, 5500, and 7000 series only. Adjusting the number of bytes for other MediaPorts is not supported.

6. If you wish to adjust Output Timing, click the **Output Timing** button. Refer to [Adjusting Output Timing](#) for details. Otherwise continue to the next step.
7. As required, add an additional video track of the same or different format or: continue by adding an audio track. Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.



**NOTE:** Since release 4.3, support is provided for Players which have two attached video tracks of the same format (MPEG 25 I-Frame).

### Additional Information about HD Playout on MediaPort 4001, 4002, 4101, and 4102 Series:

- Clips must have six or less anchor frames per GOP and have a constant bitrate (CBR).
- ASI streams can have an Open or Closed GOP structure. When playing out Open GOP clips that have been demuxed with the Harmonic MTS DemuxTool, you will need to set Mark In points for the created clips at least 3 frames into the clip. If the first few frames are not trimmed, you will see blocky playout at the beginning of the clip. You do not need to trim the first few frames if the stream has been demuxed with a MediaPort 4010.
- External bi-level reference must be connected to MediaPort 4001, 4002, 4101, and 4102 series.



**NOTE:** In prior releases, MXF IMX players could not be used to play MXF IMX clips on the MediaPort 4101 or 4102. This is now supported by creating a player with one of the MXF wrapper formats, choosing MPEG IMX 30/40/50 and attaching the MediaPort 4101 or 4102, as described in [Attaching Devices and Setting Conversion Options](#).

## Creating an MPEG HD Record only Player

Use this procedure to add an MPEG video track to a Player for HD ingest. Note that an MPEG Player cannot include embedded audio.

### To create an MPEG HD record only Player:

1. Ensure that the first 12 steps in [Creating a Player](#) are complete. Make sure the **Mode** is set to **Record Only**.
2. Click **MPEG-2** to add an MPEG video track to the Player.
3. From the **Record Format** drop-down box, select the media format to use. Choose between **I-Frame**, **Long GOP**, **IMX**, or a preset format. The following preset formats can be used to create clips, which can be edited by non-linear edit software on your own computer. Make sure to select the correct wrapper type required by your non-linear edit software.



**NOTE:** When Long GOP is selected as the record format, you can select **Enable Open GOP** if you wish to record Open GOP.

Preset formats include:

- **HDV 720.** This format automatically enters a bitrate of **19 Mbps** and a chroma of **4:2:0**.
- **XDCAM EX for NLE.** This format automatically enters a bitrate of **35 Mbps** and a chroma of **4:2:0**.
- **XDCAM HD for NLE.**
  - If you have selected a frame rate of 25 or 29.97, then you can select between bitrates of **18, 25, 35, or 50**. Bitrates of 18, 25, and 35 enter a chroma of **4:2:0**. Bitrate of 50 enters a chroma of **4:2:2**.
  - If you have selected a frame rate of 50 or 59.94, then this format automatically enters a bitrate of **50** and a chroma of **4:2:2**.

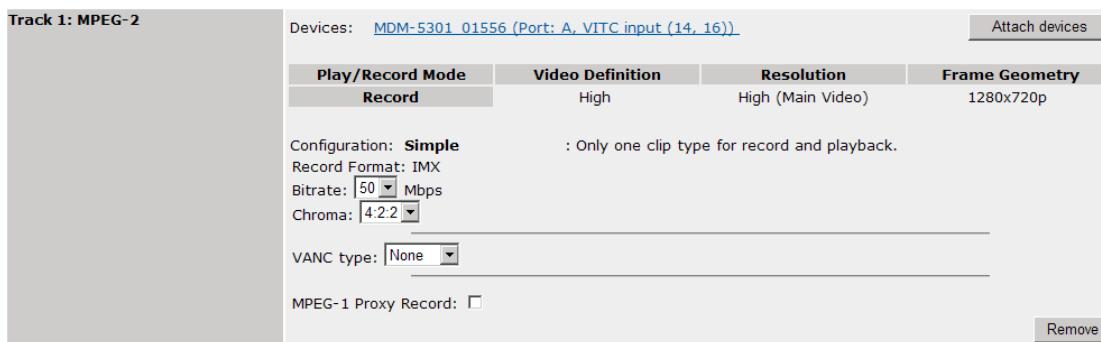


**NOTE:** The available formats vary depending on the selected Mode, Frame Rate, and Configuration.

4. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

MPEG HD tracks can be recorded by the following MediaPorts:

- MediaPort 4010
- MediaPort 5321/5322
- MediaPort 7300 (M2H, DMH)
- MediaPort 7301 (M2H)
- In SystemManager, all MediaPort 5XX2 series appear as two separate "MIP-5XX1" devices.



**Figure 14–13: Creating an MPEG HD Record Only Player**

5. In the **Bitrate** drop down box, specify the required bitrate.



**NOTE:** The bitrate ranges/values listed for I-Frame, Long GOP, and IMX are those supported by a Spectrum system in general. A particular type of MediaPort attached to a MediaDirector may have stricter limits. Refer to **MediaPort Specifications** in the *Spectrum System Installation and Hardware Reference Guide* for detailed information according to MediaPort type.

6. Select the required Chroma setting. Choose from **4:2:2** or **4:2:0**. Depending on previous selections this value may be entered automatically.
7. If the video definition of the track is Standard or both High and Standard, the **VBI Type** drop-down menu will appear. If you want to preserve or play back VBI data, select an option from the **VBI Type** drop-down menu: **Internal**, **VBI Data**, or **SMPTE 436M Track** (options will vary based on wrapper format).



**NOTE:** For clips created with non-Harmonic equipment, Harmonic recommends that you select **Internal** or **SMPTE 436M Track**.



**NOTE:** SMPTE 436M is only available for MXF clips, and is only supported on the MediaPort 53xx, 52xx, 5400, 5500, 3000, 4000, 4100, and 7xxx series with playout.

Using the eight drop-down VBI line selection boxes, select the lines that you wish to record. A minimum of one line must be selected.

Note that the VBI line selection only affects recording. When clips are played back, all VBI lines that were previously recorded will be inserted into the outgoing signal.

8. If you want to preserve or playback VANC data, select an option from the **VANC Type** drop-down menu. Depending on your wrapper format, you may select **Internal** or **SMPTE 436M Track**.



**NOTE:** SMPTE 436M is only available for MXF clips, and is only supported on the MediaPort 53xx, 52xx, 5400, 5500, 3000, 4000, 4100, and 7xxx series with playout.

In the **Maximum number of VANC data** field, enter the desired bytes per frame value. For more information about VANC, refer to [About VANC Implementation in Spectrum](#).

VANC capture adjustments (number of bytes) can be controlled for the MediaPort 5320, 5400, 5500, and 7000 series only. Adjusting the number of bytes for other MediaPorts is not supported.



**NOTE:** Depending on the attached MediaPort, the option for **MPEG-1 Proxy Record** may be available. For information on recording proxies, see [Recording Proxies with the MediaPort 5000 Series](#).

9. As required, add an additional video track of the same or different format, or continue by adding an audio track. Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.

## Creating an MPEG SD Player to Demux Transport Streams and VBI Data

**To create an MPEG SD Player to demux transport streams and VBI data:**

1. Ensure that the first 12 steps in [Creating an MPEG SD Player](#) are complete.
2. As required, add a video track of a *different* format, or continue by adding an audio track. Note the following important points regarding audio tracks:
  - AES3 elementary streams must comply with SMPTE 302M (one Packetized Elementary Stream (PES) packet per frame, one 302 header per PES packet).
  - A maximum of two Program Identifiers (PIDs) containing 2, 4, or 8 channels per PID, with 1, 2, 4, or 8 channels per file are supported where the minimum channels per PID is greater than or equal to the number of channels per file.
  - There is no need to match the channel count of the Player and stream since record no longer terminates and black is inserted if the stream is absent.

Refer to [Adding Audio Tracks](#) for general instructions on selecting audio tracks.

3. Connect the tracks to the MediaPort 4010. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

### Additional Information about Demuxing

- Only one program can be demuxed at one time.
- If no **Program Selection** number has been assigned using the **Attach Devices** page of the SystemManager application, the first program found will be demuxed by the MediaPort 4010. Refer to [Attaching Devices and Setting Conversion Options](#) for additional information.
- When configuring Record players to demultiplex ATSC streams using the MediaPort 4010, the player must be configured with the exact number of audio channels present in the feed. If the Demux player is configured for 4 channels of audio and only two channels are present, the stream will not be recorded.

## Creating an MPEG HD Player to Demux Transport Streams

**To create an MPEG HD Player to demux transport streams:**

1. Ensure that the first 12 steps in [Creating an MPEG SD Player](#) are complete.
2. As required, add a video track of a *different* format, or continue by adding an audio track. Note the following important points regarding audio tracks:
  - AES3 elementary streams must comply with SMPTE 302M (one Packetized Elementary Stream (PES) packet per frame, one 302 header per PES packet).

- A maximum of two Program Identifiers (PIPs) containing 2, 4, or 8 channels per PIP, with 1, 2, 4, or 8 channels per file are supported where the minimum channels per PIP is greater than or equal to the number of channels per file.
- There is no need to match the channel count of the Player and stream since record no longer terminates and black is inserted if the stream is absent.

Refer to [Adding Audio Tracks](#) for general instructions on selecting audio tracks.

3. Connect the tracks to the MediaPort 4010. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

#### Additional Information about Demuxing

- Only one program can be demuxed at one time.
- If no **Program Selection** number has been assigned using the **Attach Devices** page of the SystemManager application, the first program found will be demuxed by the MediaPort 4010. Refer to [Attaching Devices and Setting Conversion Options](#) for additional information.
- When configuring Record players to demultiplex ATSC streams using the MediaPort 4010, the player must be configured with the exact number of audio channels present in the feed. If the Demux player is configured for 4 channels of audio and only 2 channels are present, the stream will not be recorded.

### Creating an Uncompressed (SD only) Player

#### To add an Uncompressed (SD only) video track:

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.
2. Click **Uncompressed (SD only)** to add a 10-bit SDI video track to the Player. This media type does not include embedded audio.
3. Connect the track to the appropriate MediaPorts. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

Uncompressed (SD only) tracks may be connected to the MediaPort 1002 for recording/playing material on uncompressed (SD-only) feeds.



**NOTE:** Refer to "About SDI and SDTI within the Omneon System" in the *Spectrum System Hardware Orientation Guide* for an explanation of how material "carried" within SDTI may be recorded and played back using the MediaPort 1002.

4. As required, click **Uncompressed (SD only)** again to add more Uncompressed (SD only) tracks to the Player.
5. If you added a video track by mistake, click the **Remove** button adjacent to the track.
6. As required, add a video track of a different format, or continue by adding an audio track.



**NOTE:** Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.

### About Recording and Playing Back XDCAM HD Clips

You can record XDCAM HD compatible clips by setting up an external encoder and recording ASI using a MediaPort 4010, or by using the MediaPort 7300 or 5320 series. These MediaPorts have a multirate MPEG-2 HD encoder that can encode video at the following ranges: I-Frame 50-100 Mbps and Long GOP 18-85 Mbps. They can support either the 4:2:0 (main) or 4:2:2 (studio) compression profiles. Each MediaPort 7300 series module and MediaPort 5321 has two HD inputs and the MediaPort 5322 has four.



**NOTE:** For the list of all MediaPort 7xxx players that can play back XDCAM HD clips, refer to [Creating an XDCAM HD or XDCAM EX Player](#).

Using the SystemManager application, you can set up a player that will record at the XDCAM HD operating points with 1440 sampling, if desired. Using a MediaPort 4000 Series MediaPort, you can then play back the XDCAM HD clips on MPEG-2, Long-GOP enabled players.

To create an XDCAM HD or XDCAM EX player, which is compliant with several NLEs, including Final Cut Pro, follow the instructions in [Creating an XDCAM HD or XDCAM EX Player](#). To create an XDCAM HD player, which is RDD9 compliant (making it interoperable with Sony HDCAM-HD devices), follow the instructions in [Creating an XDCAM-HD RDD9 Player](#).

## Creating an XDCAM HD or XDCAM EX Player

To create XDCAM HD or XDCAM EX clips, which are compliant with several NLEs, including Final Cut Pro, follow the instructions in this section. To create XDCAM HD clips, which are RDD9 compliant, refer to [Creating an XDCAM-HD RDD9 Player](#).

### To create an XDCAM HD or XDCAM EX Player:

1. Ensure that the first 12 steps in [Creating a Player](#) are complete. Make sure the **Mode** is set to either **Record Only** or **Play or Record**.
2. Click **MPEG-2** to add an MPEG video track to the Player.
3. From the **Record Format** drop-down box, select the media format to use. Choose between **XDCAM HD for NLE**, or **XDCAM EX for NLE**. The following preset formats can be used to create clips, which can be edited by non-linear edit software on your own computer. Make sure to select the correct wrapper type required by your non-linear edit software.
  - **XDCAM EX for NLE.** This format automatically enters a bitrate of 35 Mbps and a chroma of 4:2:0.
  - **XDCAM HD for NLE.**
    - If you have selected a frame rate of 25 or 29.97, then you can select between bitrates of 18, 25, 35, or 50. Bitrates of 18, 25, and 35 enter a chroma of 4:2:0. Bitrate of 50 enters a chroma of 4:2:2.
    - If you have selected a frame rate of 50 or 59.94, then this format automatically enters a bitrate of 50 and a chroma of 4:2:2



**NOTE:** The available formats vary depending on the selected Mode, Frame Rate, and Configuration.

4. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions. XDCAM HD tracks may be connected to the following MediaPorts:
  - MediaPort 4001, 4002, 4010, 4101, 4102
  - MediaPort 5321/5322
  - MediaPort 7300 (M2H, DMH) for recording or playing XDCAM HD or XDCAM EX material.
  - MediaPort 7301 (M2H) for recording or playing XDCAM HD or XDCAM EX material.
  - MediaPort 7100 (M2H, DMH) for playing XDCAM HD or XDCAM EX material.
  - MediaPort 7101 (DMH) for playing XDCAM HD or XDCAM EX material.
  - MediaPort 7600 (UVP, APR) for playing XDCAM HD or XDCAM EX material.
  - MediaPort 7601 (APR) for playing XDCAM HD or XDCAM EX material.

- ChannelPort (M2H) for play only



**NOTE:** For the MediaPort 5320 series, make sure that, in the **Video Definition** drop-down menu, **High** is selected.



**NOTE:** In SystemManager, all MediaPort 5XX2 series appear as two separate "MIP-5XX1" devices.

5. In the **Configuration** drop-down menu, select either **Simple**, **Advanced**, or **Advanced Back to Back**.



**NOTE:** To play Final Cut Pro-exported XDCAM-HD 422 50 Mb clips and record clips editable by Final Cut Pro, Harmonic recommends that you create two separate players using the Simple configuration: one player for record set at 50 Mbps, and another player for play out, with the bit rate set high enough to account for any variances in the exported file (60 Mbps or above).

- The **Simple** configuration in *Figure 14–14* allows you to design an MPEG Player that records and plays back only a *single type* of MPEG clip.

Track 1: MPEG-2			
Devices: <a href="#">MDM-5301_01556 (Port: A, VITC input (14, 16), VITC output (14, 16))</a>	<a href="#">Attach devices</a>		
Play/Record Mode	Video Definition	Resolution	Frame Geometry
Record	High	High (Main Video)	1280x720p
Play	High	High (Main Video)	1280x720p

Configuration:  : Only one clip type for record and playback.  
 Record Format:   
 Bitrate: 50 Mbps  
 Chroma: 4:2:2  
 VANC type:   
 MPEG-1 Proxy Record:   
[Output Timing](#) [Remove](#)

**Figure 14–14: Creating an XDCAM HD Player—Simple Configuration**

Clip type is selected using the **Format** or **Record Format** field. The bitrate for both the encoded and the decoded clip must be the same.

- Depending on the attached MediaPort, you may configure the Player as **Advanced** or **Advanced Back to Back**. An **Advanced** Player can switch between different types of clips, such as DV/DVC PRO and MPEG-2. But, in order to switch, you must first stop the Player, eject the clip(s) from the timeline and then load the new format clips. An **Advanced Back to Back** Player can playback a mix of clip types without having to stop.

The **Advanced** configuration in *Figure 14–15* allows you to design an MPEG Player that records and plays back *different types* of MPEG and DV clips.

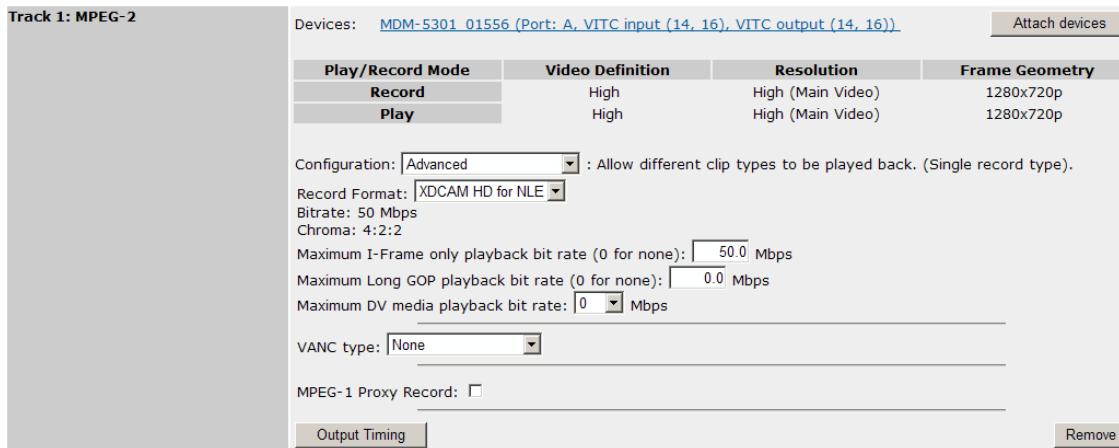


Figure 14–15: Creating an XDCAM HD Player—Advanced Configuration

The encoded clip type is selected using the **Format** or **Record Format** field, and the decoded clip types are selected using two **Playback Bitrate** fields; one for **I-Frame** only clips and one for **Long GOP** clips. With this configuration, you can play back clips that were encoded at different bitrates. However, by supporting different playback bitrates, the Player utilizes a larger IEEE 1394 bandwidth.



**IMPORTANT:** The available fields in the Advanced configuration change according to the selected Player mode: If "Play and Record" is selected, both the Record Bitrate and Playback Bitrate fields appear. If "Record Only" is selected, only the Record Bitrate field appears. If "Play Only" is selected, only the Playback Bitrate fields appear.

6. Depending on the configuration selected, proceed as follows:
  - If you selected **Simple**, enter a valid bitrate for the selected format. Note that your options may vary depending on previous selections. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*.
  - If you selected **Advanced** or **Advanced Back to Back**, your entries now depend on the Player mode:
    - **Play or Record** mode:
      - In the **Maximum I-Frame only playback bitrate...** field, leave the value as 0.
      - In the **Maximum Long GOP playback bitrate...** field, enter a valid bitrate. For a description of valid bitrates for your MediaPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.
      - In the **Maximum DV media playback Bitrate...** field, leave the value as None.
    - **Record Only** mode:
      - In the **Record Format** and **Bitrate** fields, make sure the required format and bitrate for that format is entered. See step 3.
  - 7. If necessary, select the required **Chroma** setting. Choose from **4:2:2** or **4:2:0**. In most cases, this setting will be automatically entered.

8. If you want to preserve or playback VANC data, select an option from the VANC Type drop-down menu. Depending on your wrapper format, you may select **Internal** or **SMPTE 436M Track**.



**NOTE:** SMPTE 436M is only available for MXF clips, and is only supported on the MediaPort 5320, 5220, 5400, 5500, 3000, 4000, 4100, and 7000 series with playout.

In the **Maximum number of VANC data** field, enter the desired bytes per frame value. For more information about VANC, refer to [About VANC Implementation in Spectrum](#).

VANC capture adjustments (number of bytes) can be controlled for the MediaPort 5320 and 7000 series only. Adjusting the number of bytes for other MediaPorts is not supported.



**NOTE:** Depending on the attached MediaPort and the MediaPort settings, an option for **MPEG-1 Proxy Record** (for 'Record Only' or 'Play and Record' players) may be available. For information about recording proxies, see [Recording Proxies with the MediaPort 5000 Series](#).

9. As required, add an additional video track of the same or different format.



**NOTE:** Support is provided for Players which have two attached video tracks of the same format (MPEG 25 I-Frame).

or:

Continue by adding an audio track. Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.

#### Additional Information about HD Playout on MediaPort 4001, 4002, 4101, and 4102 Series:

- Clips must have six or less anchor frames per GOP and have a constant bitrate (CBR).
- ASI streams can have an Open or Closed GOP structure. When playing out Open GOP clips that have been demuxed with the Harmonic MTS DemuxTool, you will need to set Mark In points for the created clips at least 3 frames into the clip. If the first few frames are not trimmed, you will see blocky playout at the beginning of the clip. You do not need to trim the first few frames if the stream has been demuxed with a MediaPort 4010.
- External bi-level reference must be connected to MediaPort 4001, 4002, 4101, and 4102 series.

## Creating an XDCAM-HD RDD9 Player

To create an RDD9 compliant XDCAM-HD player (inter-operable with Sony XDCAM-HD devices), follow the instructions in this section.

### XDCAM-HD RDD9 Player Restrictions

Note the following restrictions with XDCAM-HD RDD9 players.

- This player is only available in a simple configuration, meaning it will record and play back only a single type of MPEG-2 clip.
- This player type only allows one MPEG-2 video track. Once the MPEG-2 video track appears, buttons for all other video tracks are grayed out.
- The only available audio file type is .wav.
- Audio channels are recorded with 1 channel per file
- For record, you must have a minimum of 2 audio channels and a maximum of 16.

- If the bit rate for the video is 18, 25, or 35 Mbps, then the record sample size for the audio track is set to 16 bps. If the bit rate for the video is 50 Mbps, then the record sample size for the audio track is set to 24 bps.

**To create an XDCAM-HD RDD9 player:**

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.
- Make sure the **Mode** is set to either **Record Only** or **Play or Record**.
2. From the **Media Wrapper Format** drop down menu, select one of the following:
  - **MXF OP1a (SMPTE RDD9)**
  - **MXF OP1A (Internal, early Sony style XDCAM-HD RDD9)**

The first option, **MXF OP1a (SMPTE RDD9)**, will work with most editors. If you are using an editor, such as Edius, that requires the early Sony RDD9 format, then select **MXF OP1A (Internal, early Sony style XDCAM-HD RDD9)**. If you are unsure of which one to select, first try **MXF OP1a (SMPTE RDD9)** and, only if it does not work, then try **MXF OP1A (Internal, early Sony style XDCAM-HD RDD9)**.

3. This automatically adds an MPEG-2 video track and a .wav audio track.
4. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions. XDCAM-HD RDD9 tracks may be connected to the following MediaPorts:
  - MediaPort 4010 for record only
  - MediaPort 5321/5322
  - MediaPort 7300 (M2H, DMH) for recording or playing XDCAM-HD RDD9 material.
  - MediaPort 7301 (M2H) for recording or playing XDCAM-HD RDD9 material.
  - MediaPort 7100 (M2H, DMH) for playing XDCAM-HD RDD9 material.
  - MediaPort 7101 (DMH) for playing XDCAM-HD RDD9 material.
  - MediaPort 7600 (UVP, APR) for playing XDCAM-HD RDD9 material.
  - MediaPort 7601 (APR) for playing XDCAM-HD RDD9 material.
  - ChannelPort (M2H) for play only



**NOTE:** In SystemManager, all MediaPort 5XX2 series appear as two separate "MIP-5XX1" devices.

[Figure 14-16](#) shows an XDCAM-HD RDD9 player.

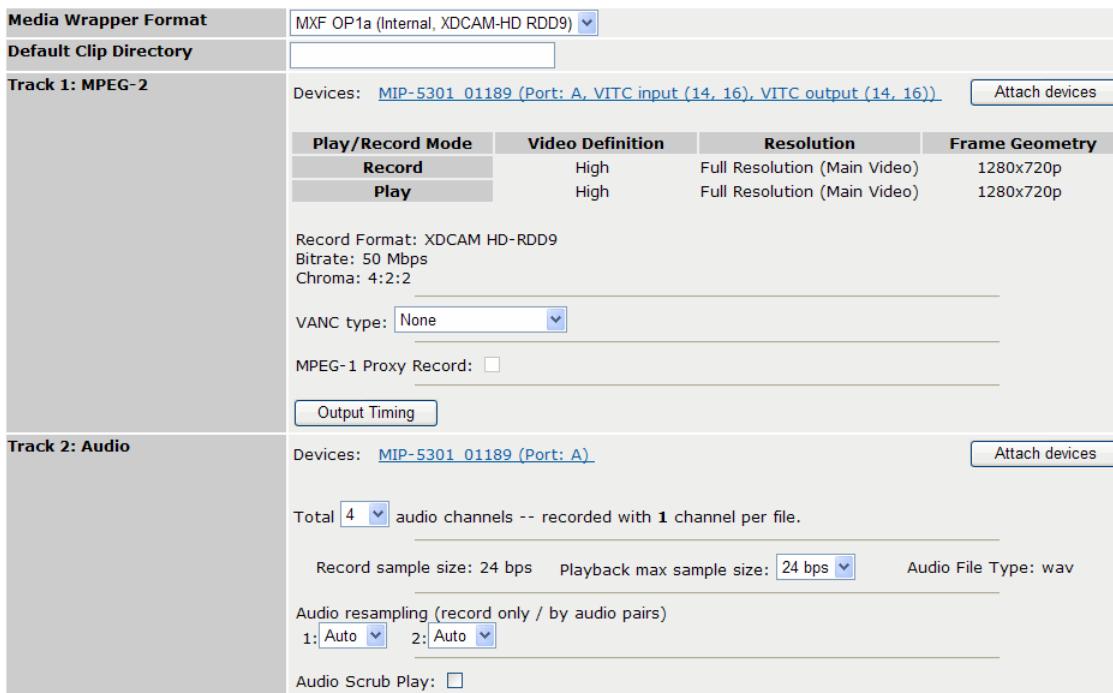


Figure 14–16: Creating an XDCAM-HD RDD9 player



**NOTE:** To play Final Cut Pro-exported XDCAM-HD 422 50 Mb clips and record clips editable by Final Cut Pro, Harmonic recommends that you create two separate players using the Simple configuration: one player for record set at 50 Mbps, and another player for play out, with the bit rate set high enough to account for any variances in the exported file (60 Mbps or above).

5. If it is not already specified, in the **Bitrate** drop down box, specify the required bitrate.

The **Chroma** is determined automatically by the bit rate setting. A bit rate of 18, 25, and 35 Mbps results in chroma: 4:2:0. A bit rate of 50 Mbps results in chroma: 4:2:2.

6. If you want to preserve or playback VANC data, select an option from the **VANC Type** drop-down menu. Depending on your wrapper format, you may select **Internal** or **SMPTE 436M Track**.



**NOTE:** SMPTE 436M is only available for MXF clips, and is only supported on the MediaPort 53xx, and 7xxx series with playout.

In the **Maximum number of VANC data** field, enter the desired bytes per frame value. For more information about VANC, refer to [About VANC Implementation in Spectrum](#).

VANC capture adjustments (number of bytes) can be controlled for the MediaPort 5320, and 7000 series only. Adjusting the number of bytes for other MediaPorts is not supported.



**NOTE:** Depending on the attached MediaPort and the MediaPort settings, an option for **MPEG-1 Proxy Record** (for 'Record Only' or 'Play and Record' players) may be available. For information about recording proxies, see [Recording Proxies with the MediaPort 5000 Series](#).

7. As required, add an additional audio track. Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks. For information on restrictions for audio tracks on XDCAM-HD RDD9 players., refer to [XDCAM-HD RDD9 Player Restrictions](#) in this section.

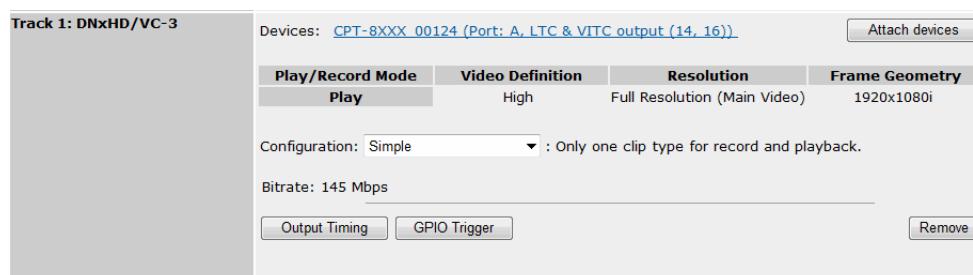
## Creating a DNxHD/VC-3 Player

### To add a DNxHD/VC-3 video track to the Player:

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.
2. Click **DNxHD/VC-3** to add a DNxHD/VC-3 video track to the Player.
3. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

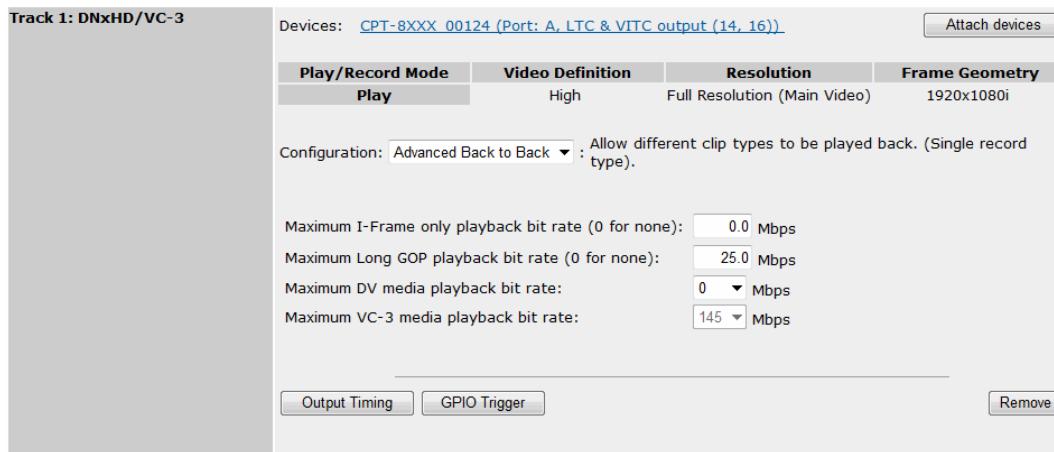
DNxHD/VC-3 tracks may be connected to the following MediaPorts:

- MediaPort 1002 for recording/playing material on SDI feeds.
  - MediaPort 7100 (VC3P) for play only, (VC3R) for record only, and (VC3) for play and record
  - MediaPort 7101 (VC3P) for play only, (VC3R) for record only, and (VC3) for play and record
  - MediaPort 7300 (VC3P) for play only, (VC3R) for record only, and (VC3) for play and record
  - MediaPort 7301 (VC3P) for play only, (VC3R) for record only, and (VC3) for play and record
  - MediaPort 7600 (VC3P) for play only, (VC3R) for record only, and (VC3) for play and record
  - MediaPort 7601 (VC3P) for play only, (VC3R) for record only, and (VC3) for play and record
  - ChannelPort (VC3P) for play only
4. In the **Configuration** drop-down menu, select either **Simple** or **Advanced Back to Back**.
  - The **Simple** configuration in [Figure 14-17](#) allows you to design a Player that records or plays back only a *single* type of DNxHD/VC-3 clip.



**Figure 14-17: Creating a DNxHD/VC-3 Player—Simple Configuration**

- An **Advanced Back to Back** player can switch between different types of clips, such as DNxHD/VC-3 and MPEG-2 without having to stop.



**Figure 14–18: Creating a DNxHD/VC-3 Player—Advanced Configuration**

The decoded clip types are selected using the **Playback bit rate** fields. With this configuration, you can play back clips that were encoded at different bitrates. However, by supporting different playback bitrates, the Player utilizes a larger IEEE 1394 bandwidth.

5. Depending on the configuration selected, proceed as follows:
6. If you selected **Simple**, continue to step 7.

If you selected **Advanced Back to Back**, enter a valid bit rate for the selected format. For a description of valid bitrates for your MediaPort or ChannelPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.

For **VC-3 media playback**, the bit rate will be entered automatically depending on the player frame rate:

- For NTSC frame rates (59.94Hz or 29.97Hz), the bit rate will be 145 Mbps.
  - For PAL frame rates (50Hz or 25Hz), the bit rates will be 120 Mbps.
7. As required, click **DNxHD/VC-3** again to add more DNxHD/VC-3 tracks to the Player.
  8. If you added a video track by mistake, click the **Remove** button adjacent to the track.
  9. As required, add a video track of a different format, or continue by adding an audio track.

Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.



**NOTE:** Playback of a DNxHD/VC-3 clip with an MXF wrapper on a MediaPort 1000 series may be delayed for up to three seconds.

## Creating a Data Player (DVB/ASI)

To add a **Data** track to the Player, for use in DVB/ASI applications:

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.
2. Click **Data** to add a data track to the Player.
3. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

Data tracks may be connected to the following MediaPorts:

- MediaPort 1005 for recording and playing.
  - MediaPort 4010 for recording and playing.
4. Enter a bitrate value in the **Maximum Bitrate** field. The valid bitrate field is 2 -100.0 Mbps.
  5. If you added a track by mistake, click the **Remove** button adjacent to the track.



**NOTE:** Audio tracks should not be added to a Data Player.

## Creating an AVC-Intra Player

### To add an AVC-Intra video track to the Player:

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.
2. Click **AVC-Intra** to add an **AVC-Intra** video track to the Player.
3. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

AVC-Intra tracks can be added to the following MediaPorts for recording and playing.

- MediaPort 5620 series
- MediaPort 7600 (UVP, APR)
- MediaPort 7601 (APR)
- ChannelPort (APR) for play only

Track 1: AVC-Intra		Devices: MDM-5621_08801 (Port: B, VITC input (14, 16), VITC output (14, 16))					Attach devices
		Play/Record Mode	Video Definition	Resolution	Frame Geometry	Horizontal Sample Rate	
		Record	High	High (Main Video)	Unknown	1280	
		Play	High	High (Main Video)	Unknown		
		Format: Class 100					
		VANC type: SMPTE 436M Track					
		Number of VANC data (50 - 2880): 2880 Bytes per frame					
		MPEG-1 Proxy Record: <input type="checkbox"/>					
		Output Timing					Remove

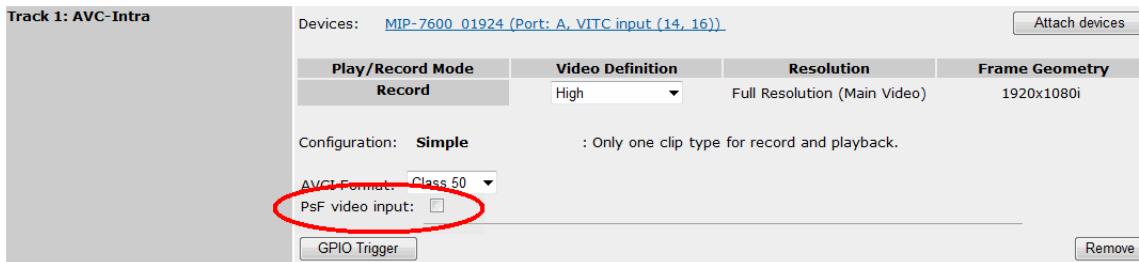
Figure 14–19: Creating an AVC-Intra player

4. In the **Format** field, select either **Class 50** or **Class 100** as required.
5. If you want to preserve or playback VANC data, select an option from the **VANC Type** drop-down menu. Depending on your wrapper format, you may select **Internal** or **SMPTE 436M Track**. If you select an option for VANC, enter a value for the number of bytes of VANC data per frame to be preserved. For more information on VANC, refer to [About VANC Implementation in Spectrum](#).



**NOTE:** Depending on the properties of the attached MediaPort, the option for **MPEG-1 Proxy Record** may be available. For information on recording proxies, see [Recording Proxies with the MediaPort 5000 Series](#).

6. If you have attached a MediaPort 7600 and have selected a **Frame Rate** of either 25 Hz or 29.97 Hz and a **Video Definition** of High, a **PsF video input** checkbox appears. See [Figure 14–20](#).



**Figure 14–20: Recording progressive segmented frame input**

Check this if you wish to record progressive segmented frame content (1920x1080/25PsF or 1920x1080/29.97PsF)



**NOTE:** For record AVC-Intra players that use an MXF wrapper type, you may select to record SPS (Sequence Parameter Set) and PPS (Picture Parameters Set) data in each frame. To do this, you must select **Record SPS/PPS in every frame of AVCI clips that use MXF wrapper** on the MediaDirector Properties page for the connected MediaDirector. See [Viewing Spectrum Video Server Properties](#) for details.

7. As required, add a video track of a different format, or continue by adding an audio track. Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.

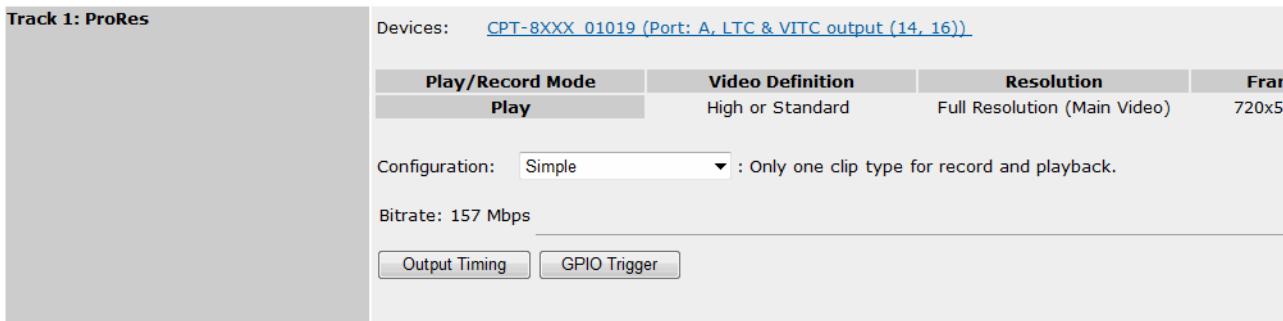
## Creating a ProRes Player

### To add a ProRes video track to the Player:

1. Ensure that the first 12 steps in [Creating a Player](#) are complete.
2. Click **ProRes** to add a ProRes video track to the Player.
3. Connect the track to the appropriate MediaPort or ChannelPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.

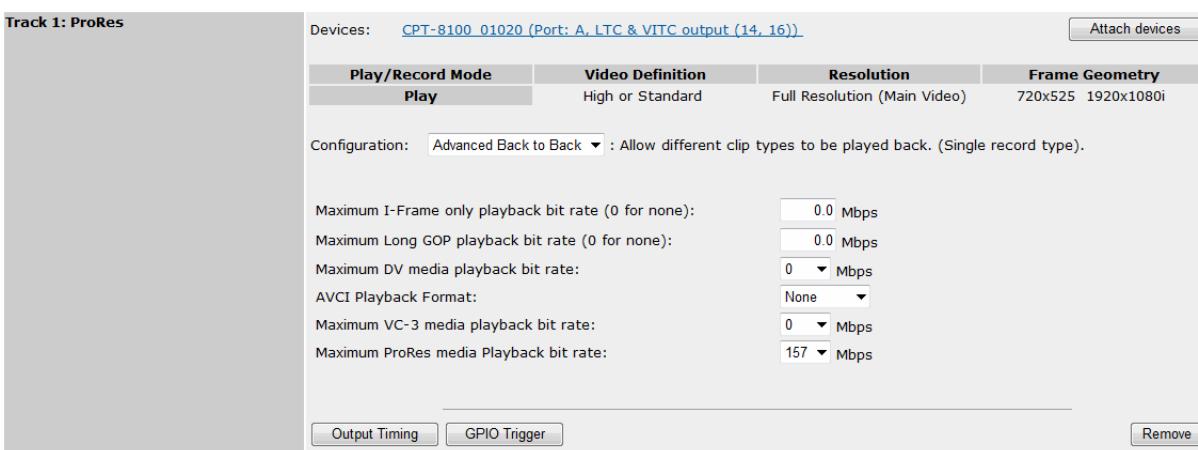
ProRes tracks may be connected to the following MediaPorts or ChannelPort:

- MediaPort 7100 or 7101 (SPL-PRORES) for play only
  - MediaPort 7300 or 7301 (SPL-PRORES) for play only
  - MediaPort 7600 or 7601 (SPL-PRORES) for play only
  - ChannelPort (SPL-PRORES) for play only
4. In the **Configuration** drop-down menu, select either **Simple** or **Advanced Back to Back**.
  - The **Simple** configuration in, as shown in [Figure 14–21](#), allows you to design a Player that plays back only a *single type* of ProRes clip.



**Figure 14–21: Creating a ProRes Player—Simple Configuration**

- An **Advanced Back to Back** player, as shown in [Figure 14–22](#), can switch between different types of clips, such as ProRes and MPEG-2 without having to stop.



**Figure 14–22: Creating a ProRes Player—Simple Configuration**

The decoded clip types are selected using the **Playback bit rate** fields. With this configuration, you can play back clips that were encoded at different bitrates. However, by supporting different playback bitrates, the Player utilizes a larger IEEE 1394 bandwidth.

5. Depending on the configuration selected, proceed as follows:
6. If you selected **Simple**, continue to step 7.

If you selected **Advanced Back to Back**, enter a valid bit rate for the selected format. For a description of valid bitrates for your MediaPort or ChannelPort, refer to the *Spectrum System Installation and Hardware Reference Guide* or the *Spectrum MediaDeck 7000 User Guide*. Clips with bitrates below the entered value can also be played.

For **Maximum ProRes media Playback bit rate**, the bit rate will be entered automatically depending on the player frame rate:

- For NTSC frame rates (59.94Hz or 29.97Hz), the bit rate will be 157 Mbps.
  - For PAL frame rates (50Hz or 25Hz), the bit rates will be 122 Mbps.
7. As required, click **ProRes** again to add more ProRes tracks to the Player.
  8. If you added a video track by mistake, click the **Remove** button adjacent to the track.

9. As required, add a video track of a different format, or continue by adding an audio track.

Refer to [Adding Audio Tracks](#) for instructions on selecting audio tracks.

## Configuring Subtitle Insertion

If you have purchased a license for onboard subtitle insertion and configured a player for 25 or 50 Hz frame rate, Spectrum allows you to insert and configure subtitle information for that player.

In order to use subtitle insertion, make sure to follow the procedures in this section:

1. Create a subtitle directory in the clip.dir folder on your video server that you can use to copy subtitle files to your system. Follow the steps in [Creating the Subtitles Directory on the Video Server](#).
2. Verify that the filetypes.conf file on your video server supports subtitles. Follow the steps in [Verifying that filetypes.conf Supports Subtitle Insertion](#).
3. Configure subtitle insertion from the Edit Player page. Follow the steps in [Configuring Subtitle Insertion from the Edit Player page](#).

### Creating the Subtitles Directory on the Video Server

By default, Spectrum looks for subtitle files in clip.dir/subtitle.dir on the video server file system. This folder is not created automatically.



**IMPORTANT:** SystemManager does not verify if the subtitle directory exists on the video server file system. Therefore, it will not provide any error messages if the directory does not exist.

#### To create subtitle.dir:

1. From SystemManager, click the **Disk Utilities** icon in the left-hand column to open the **Disk Utilities** page.
2. From the **Disk Utilities** page, click the hyperlink for your video server to open the corresponding Disk Utilities page.
3. In the **Logical View** area, click **Explore Filesystem file://...**, as shown in [Figure 14–23](#).

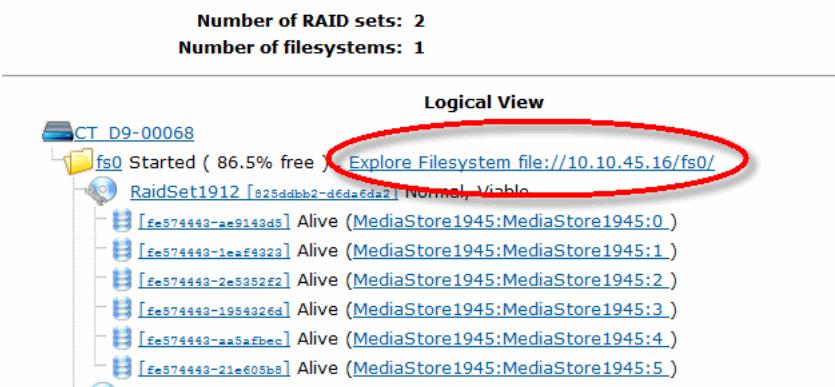
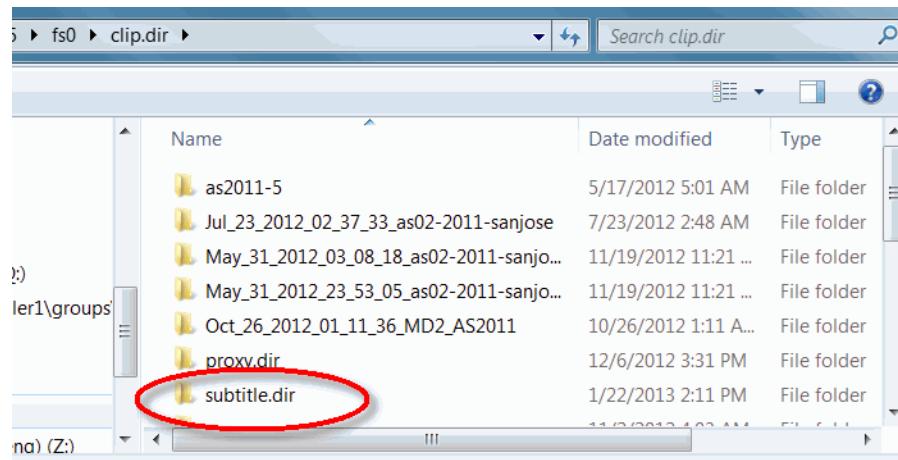


Figure 14–23: File System, Logical View

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

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

- a. From Internet Explorer, click **Tools > Internet Options > Security > Trusted Sites > Sites** to open the **Trusted sites** dialog box.
- b. In the **Add this website to the zone** field, enter your SystemManager IP address (preceded by "http://"), and then click **Add**.
- c. Click **Close** and then click **OK**. Retry the Explore Filesystem link.
5. Using Windows Explorer, create a new folder named **subtitle.dir** in the **clip.dir** directory on the file system. See [Figure 14-24](#).



**Figure 14-24: Creating subtitle.dir**

### Verifying that filetypes.conf Supports Subtitle Insertion

Before copying any subtitle files to the subtitle directory on video server, make sure that the filetypes.conf configuration file on the video server includes the following line:

```
small /subtitle.dir/.*$
```

To modify the filetypes.conf file, navigate to the Properties page for your video server and, under Change Settings, click **Edit filetypes.conf**.

---

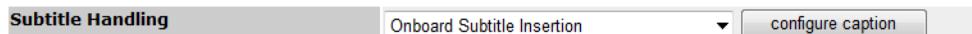
**NOTE:** For newer video servers, this line may already be present. For older video servers, you may need to add it. If this line is not present and you attempt to play subtitles, an error message will appear.



### Configuring Subtitle Insertion from the Edit Player page

#### To configure subtitle insertion:

1. Ensure that the first 11 steps in [Creating a Player](#) are complete.
2. In the **Subtitle Handling** field, select **Onboard Subtitle Insertion**. The **Configure Caption** button will be activated.



3. Click **Configure Captions** to open the Configure Captions page. See [Figure 14-25](#).

4. From the **HD Transmission mode** drop-down menu, select either **OP47** or **SMPTE2031**. This mode will apply to all streams and services that you configure on this page.
5. Click **Add Stream** to open the stream section of the page. You may add 8 streams per player.
6. In the stream section of the page, select the VBI lines that will be used for the down-converted output of the subtitle stream. Make sure to select enough VBI lines to accommodate the subtitle information.
7. If required by your system, you may select **Dummies** to insert “dummy” packets when subtitle information is not present in the stream.
8. Click **Add Service** to add a subtitle service to the stream. You may add multiple services to a stream.



**Figure 14–25: Configure Captions**

9. Configure the service as follows:
  - **Language:** Select the desired language.
  - **Row0:** Type a label for this subtitle service.
  - **Page:** Type the required page number based on your language selection.
  - **Stop pg.:** Type the page number used for the packets that terminate a subtitle submission.
  - **File Type:** Select the file type for this service.
  - **Suffix Tags (Optional):** If you wish to include suffix tags for this service, type them in this field. Suffixes may begin with any valid character or be empty (for example, .en,\_en,,en) Note that two commas together may be used to indicate a blank tag.
  - **Extensions (Required):** Type the extensions to be used for your subtitles. Extensions must begin with a period and be separated by commas (for example, .stl,.pac)
  - **Parallel (Checked by default):** You may clear this check box for Serial mode. For information on Parallel vs. Serial, refer to Section 9.3.1.3 of the *Enhanced Teletext Specification ETSI EN 300 706*.
  - **Clears:** Select to make sure subtitle text is automatically removed from the screen.
  - **Double Transmit:** If required by your system, select to send subtitle packets twice.

- **Remove:** Click to remove a service.
10. Click **Apply** to apply the changes or click **Add Stream** to add another subtitle.
  11. If you wish to remove a stream, you may click the **Remove** button in the Stream section of the page.
  12. When finished configuring, click **Done** to return to the **Edit Player** page.

## Recording Proxies with the MediaPort 5000 Series

A proxy is a low-resolution version of recorded video content. The 5320, 5220, and 5620 series MediaPorts and 5320 and 5220 series MediaDeck Modules allow you to record proxies to your Spectrum or MediaDeck system. For each of the 5320, 5220, and 5620 series MediaPorts you can have two channels configured and enabled to record proxies.

In order to configure a player to record proxies, the attached MediaPort or MediaDeck Module must first be set for Proxy mode. Once the MediaPort or MediaDeck Module and attached player is configured to record proxies, when the player records, it will simultaneously write a proxy file to the **proxy.dir** directory located in the main clip directory, which is **clip.dir** by default. Proxy files will retain the same base name as the source clip and use the extension **.mpg**.

Note that in order to enable the proxy feature, any players configured for audio scrub must be deactivated due to bandwidth constraints. Perform the following procedures in the order listed below.

### Configuring a MediaPort 5000 Series to Record Proxies



**NOTE:** Note this section applies only to the MediaPort 5320, 5220, and 5620 series, and MediaDeck Modules 5320 and 5220 series.

#### To configure your MediaPort or MediaDeck Module to record proxies:

1. From the **System Diagram** page, click the icon for the MediaPort or MediaDeck Module you will use to record proxies. Its **MediaPort Properties** page appears.
2. Under **General Information**, scroll to the **Proxy Record Mode versus Audio Scrub Play Mode** section.

This section will show either **Proxy Record** mode enabled or **Audio Scrub** mode enabled. They cannot both be enabled at the same time. If the status under **After Next Reboot** and **After Last Reboot** shows **Proxy Record** then continue to [Configuring a Player for a MediaPort 5000 Series to Record Proxies](#).

If the status shows **Audio Scrub Play** then do the following:

- a. Click **Set Proxy Record Mode**.

Proxy Record Mode versus Audio Scrub Play Mode	After Next Reboot	After Last Reboot
	Audio Scrub Play	Set Proxy Record Mode

A warning message appears indicating that all players attached to this MediaPort which are configured for Scrub Audio must be deactivated before you record proxies, otherwise their performance will be affected. Click **OK**.

- b. If you have players that are configured for Audio Scrub, deactivate those players at this time. Refer to [Activating and Deactivating Players](#).
- c. Restart the MediaPort or MediaDeck Module in order for the changes to take affect. Refer to [Rebooting the MediaPort](#).

- d. Continue to [Configuring a Player for a MediaPort 5000 Series to Record Proxies](#).

## Configuring a Player for a MediaPort 5000 Series to Record Proxies

To configure a player to record proxies:

- Follow the first 9 steps in [Creating a Player](#) to create an **MPEG Record Only** player or **Play and Record** player (SD or HD).
- Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions. The following MediaPorts 5xxx Series support proxies: MediaPort 5320, 5220, and 5620.



**NOTE:** When attaching the MediaPort 5320, 5220, and 5620 you may select either Channel A or Channel B as the Connection Port.

- Follow the instructions to add an audio track. Refer to [Adding Audio Tracks](#). Once you have added an audio track, the check box for **MPEG-1 Proxy Record** will be enabled (see [Figure 14–26](#)).

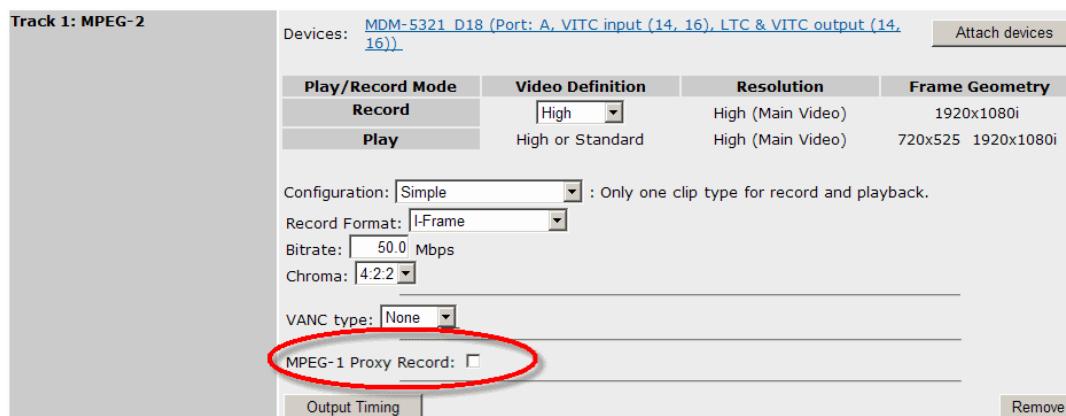


Figure 14–26: MPEG-1 Proxy Record check box

- Select the **MPEG-1 Proxy Record** check box.

An MPEG-1 track, identified as a **Low Resolution Proxy**, will appear below the audio track (see [Figure 14–27](#)).

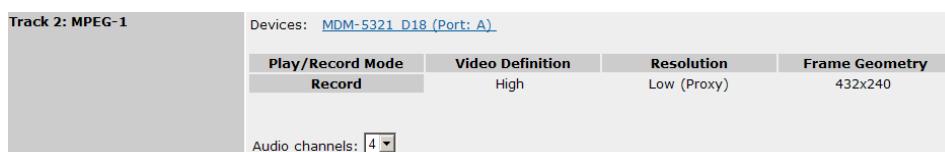


Figure 14–27: Low Resolution Proxy

By default, the proxy track shows the same number of audio channels as the audio track for this player. This number can be changed but may not exceed 8 channels.

- Activate the player. Refer to [Activating and Deactivating Players](#).

When used to record, this player will simultaneously write a proxy file to the **proxy.dir** directory located in the main clip directory, which is **clip.dir** by default. Proxy files will retain the same base name as the source clip and use the extension **.mpg**.

## Recording Proxies with the MediaPort 7000 Series

A proxy is a low resolution version of recorded video content. The MediaPort 7101, 7301, and 7601 series allow you to record proxies to your Spectrum system. For each of the MediaPort modules you can have two channels configured to record proxies.

Once a player is configured to record proxies, when the player records, it will simultaneously write a proxy file to the **proxy.dir** directory located in the main clip directory on your file system, which is **clip.dir** by default. Proxy files will retain the same base name as the source clip and use the extension **.mxf** or **.mov** depending on your configuration.

### To configure a player to record proxies:

1. Follow the first 9 steps in [Creating a Player](#) to create **Record Only** player or **Play and Record** player (SD or HD).
2. Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions. The following MediaPorts 7000 Series support proxies: MediaPort 7101, 7301, and 7601.



**NOTE:** When attaching the MediaPort, you may select either Channel A or Channel B as the Connection Port.

A checkbox for **MPEG-4 Proxy Record** will appear as shown in [Figure 14–28](#).

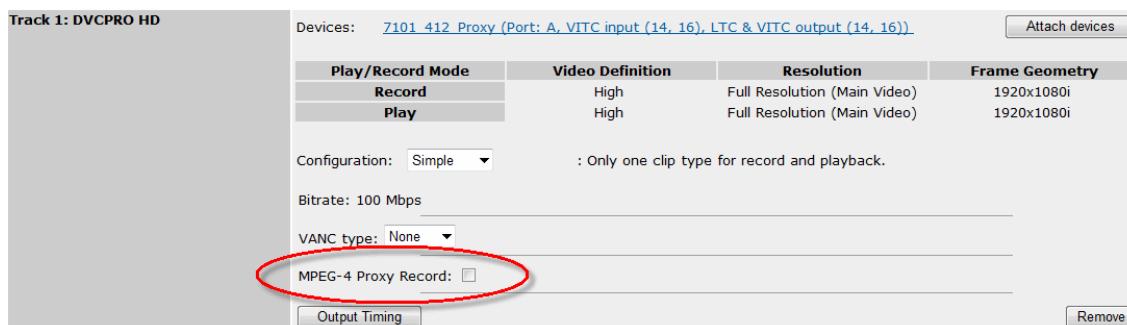


Figure 14–28: MPEG-4 Proxy Record check box

3. Select the **MPEG-4 Proxy Record** check box. A separate track called **Proxy H.264** will appear (see [Figure 14–29](#)).

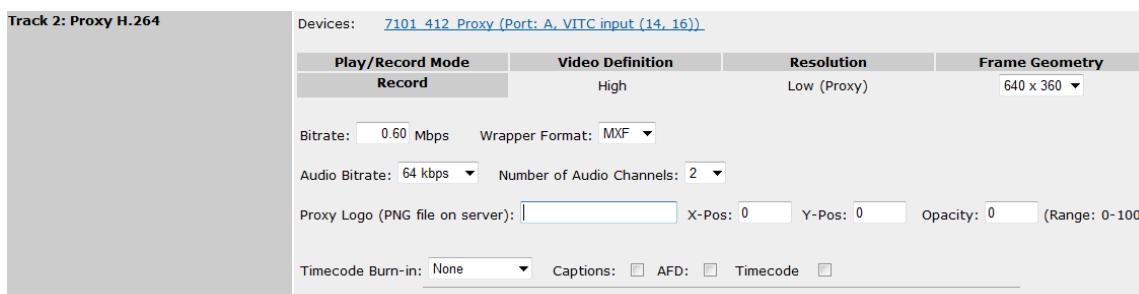
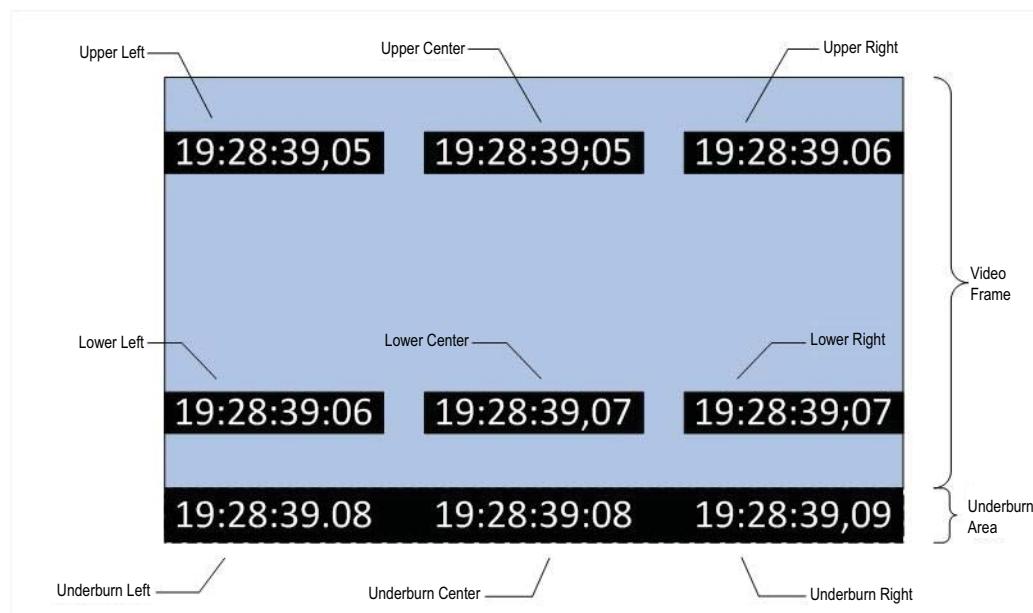


Figure 14–29: Proxy H.264 track

4. Configure the proxy track as follows:

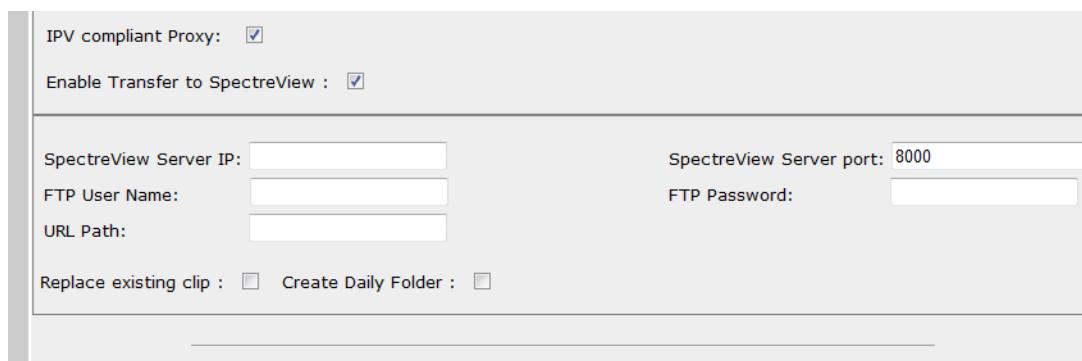
- For the **Video Definition** column, note that this value will reflect the Video Definition you have selected for the associated video track.
- In the **Frame Geometry** section, a drop down menu allows you to select the frame geometry for the proxy. Note that the options in the Frame Geometry menu will change depending on whether the player is configured for Standard or High Definition, and depending on the selected frame rate of the player.
- In the **Bitrate** field, enter the desired video bit rate for the proxy from 0.6 to 3.0 Mbps.
- In the **Wrapper Format** field, select either MXF or MOV for the wrapper format.
- In the **Audio Bitrate**, select 64, 96, or 128 kbps for the audio bit rate.
- In the **Number of Audio Channels** drop down menu, select the desired number.
- In the **Proxy Logo** field, you can enter the path of any logo you wish to appear on the proxy. Note that the logo must be a .PNG file and must reside on your Spectrum file system.
  - In the **X-Pos** field, enter a value for the horizontal placement of logo. The value will depend on the selected frame geometry. For example, if the frame geometry is 352 x 288, the X-Pos value will be between 0 and 352.
  - In the **Y-Pos** field, enter a value for the vertical placement of logo. The value will depend on the selected frame geometry. For example, if the frame geometry is 352 x 288, the Y-Pos value will be between 0 and 288.
  - In **Opacity** field, enter a value for the desired percentage of opacity of the logo.
- In the **Timecode Burn** field, select an option for the placement of the timecode on the proxy. The default is none. The graphic in *Figure 14–30* illustrates each of the options.



**Figure 14–30: Timecode Burn locations**

- Select the **Captions** check box if you wish to embed closed caption information in the proxy.
- Select the **AFD** check box if you wish to store Active Format Description (AFD) as ancillary data in the proxy.

- Select the **Timecode** check box if you wish to embed the timecode in the proxy wrapper.
- Select the **IPV compliant Proxy** check box if you wish to create a proxy track that can be used with IPV SpectreView\*.
- The **Enable Transfer to SpectreView** check box appears if you have selected “IPV compliant Proxy.” Select this checkbox if you wish to enable transfers to SpectreView. Once selected, additional fields for configuration with SpectreView appear, as shown in *Figure 14–31*. Configure them as follows:
  - **SpectreView Server IP:** Enter the IP address of the SpectreView Server.
  - **SpectreView Server port:** Enter the port number for the SpectreView server. Note that the default value of 8000 is the correct port number for connecting via Spectrum.
  - **FTP User Name:** Enter the FTP user name required for transferring files with SpectreView.
  - **FTP Password:** Enter the FTP password required for transferring files with SpectreView.
  - **URL Path:** Enter the URL path for performing clip transfers into SpectreView.
  - **Replace existing clip:** Select if you wish to overwrite any existing proxy file of the same name.
  - **Create Daily Folder:** Select if you would like the IPV server to create a new subdirectory each day within the FTP destination folder, which will be named according to the month, day, and year.



**Figure 14–31: Configuring an IPV Compliant Proxy**

**NOTE:** Spectrum does not perform any checks to make sure file names are compliant with the IPV SpectreView server, and will not generate any errors or messages if you have specified a file name that is not compliant. For information on accepted file names, refer to the IPV SpectreView documentation.

## Adding Audio Tracks

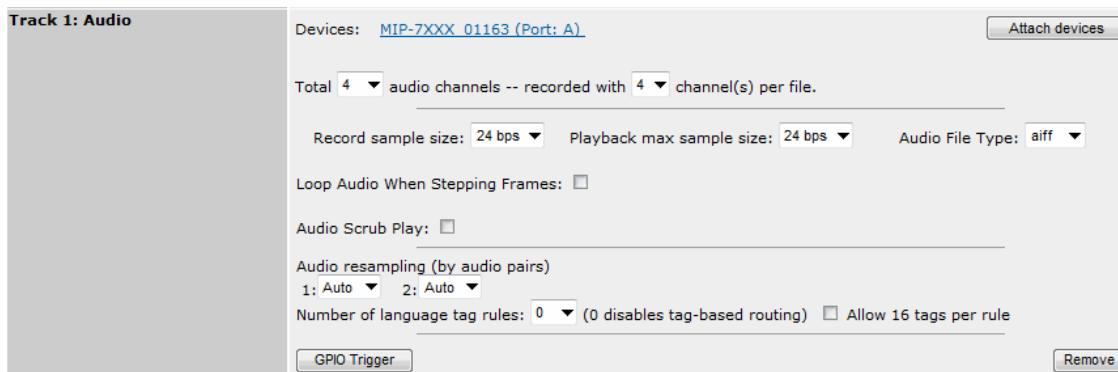
Audio tracks can be added to any Player (except Data Players), in addition to the default “interleaved” audio tracks that are present only in DV, DVCPro and DVCPro 50 Players. These tracks can be recorded in .aiff or .wav format. Note the following important points regarding interleaved audio:

- DV and DVCPro video files (.dv) by default include two channels of interleaved audio.
- DVCPro 50 video files (.dv) by default include four channels of interleaved audio.

Refer to **About AES/EBU Audio and Interleaved Audio** in the *Spectrum System Installation and Hardware Reference Guide* for additional information.

- **HDCAM (.hdcam)** video files do not include interleaved audio. When a MediaPort 1002 is used, you can select either audio from AES/EBU inputs or the audio embedded within the SDI/SDTI input stream. This selection is made on the **Attach Devices** page. An SDI Player requires a separate audio track in either case.
- **MPEG (.mpg)** video files do not contain interleaved audio. When a MediaPort 1001a or 1003a is used, you can select audio from either AES/EBU inputs or the audio embedded within the SDI input stream. This selection is performed on the **Attach Devices** page. An MPEG Player requires a separate audio track in either case.

Use [Figure 14–32](#) for reference during the procedure.



**Figure 14–32: Adding a Separate Audio Track**

#### To add a separate audio track to a Player:

1. On the **Edit Player** page, click the **Audio** button to add an audio track.
2. Connect the Audio track to a MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.



**NOTE:** In SystemManager, all MediaPort 5XX2 series appear as two separate "MIP-5XX1" devices.



**NOTE:** When configuring Record players to demultiplex ATSC streams using the MediaPort 4010, the player must be configured with the exact number of audio channels present in the feed. If the Demux player is configured for 4 channels of audio and only 2 channels are present, the stream will not be recorded.



**NOTE:** An advanced feature is available that allows you to configure a single Player with multiple audio tracks. In this configuration, each audio track is associated with its own individual MediaPort. Refer to [Creating Multiple Audio Track Players](#) for details.

3. In the **Total** drop-down box, choose the total number of audio channels that you wish to record in the *entire* track.
4. In the **Recorded with** drop-down box, choose the number of audio channels that you wish to record in each file. Select between 2, 4, 6, 8, or 16 channels per file. Note that not all choices are available, depending upon your selection in the "**Total**" drop-down.

Refer to [About Audio Track Combinations](#) for additional information on what possibilities are offered in these settings.

5. Select the maximum sample size variable for the audio data played back or recorded by this player. Depending on the type of player one or both of the following menu options will appear:

- **Record sample size:** choose between 16-bit or 24-bit samples.
  - **Playback max sample size:** choose between 16-bit, 24-bit, and 32-bit samples. Refer to [Attaching Devices and Setting Conversion Options](#) for details on controlling the MediaPort's audio I/O format.
6. In the **Audio File Type** drop-down box, choose between **.aiff** or **.wav** formats. Select the appropriate file type, based on your individual requirements. There is no difference in performance between the two file types.



**NOTE:** Depending on the attached MediaPort and the MediaPort settings, an option for **Audio Scrub Play** (for 'Play Only' or 'Play and Record' players) may be available. For information about Audio Scrub, see [Configuring Audio Scrub](#).

7. For MediaPorts 7000 series (with Spectrum 6.4 or later) the **Loop Audio When Stepping Frames** checkbox appears. When this option is checked, if you pause the player, the audio for the paused frame and the following nine frames will play in a continuous loop.
8. Depending on the type of MediaPort, the **Audio Scrub Play** checkbox may appear. For details on configuring Audio Scrub, refer to [Configuring Audio Scrub](#).
9. The **Audio Resampling** section appears in all players attached to a 5xxx series MediaPort or 7000 series MediaPort, and record-enabled players attached to any other MediaPort used for record. The number of drop-down boxes changes dynamically, depending upon your selection in the **Total** drop-down box.

For each audio pair:

- Choose **Auto** to record normal PCM audio data, or correctly flagged non-PCM data (for example, Dolby AC-3, Dolby E). Normal PCM audio data will be re-sampled so that it is clock-synchronized with video. Non-PCM data will be passed unchanged.
  - Choose **None** to force audio resampling off. Use this selection if your playback equipment does not properly tag non-PCM data.
  - The **Number of language tag rules** drop-down box allows you to apply language tag rules for the playout of audio files associated with the audio tracks of a particular Player. To apply a language tag rule to an audio track, refer to [Configuring Track Tag Rules for an Audio Track](#).
10. If you added an audio track by mistake, click the **Remove** button adjacent to the track.

Refer to [About Selectable Audio Tracks](#) and [About Audio Track Combinations](#) for additional important audio track information.



**NOTE:** Spectrum cannot record audio simultaneously from multiple MediaPorts into a MPEG-2 MXF OP1a track at 29.97/59.94 Hz. When recording this wrapper format and frame rate, all audio must come from a single MediaPort. This limitation does not apply to other wrapper formats or frame rates.

## About Selectable Audio Tracks

Note the following important points regarding separate audio tracks:

- All separate audio files associated with a single audio track must have the same number of channels, sample size and file format.
- When recording Dolby E or Dolby AC3, do not configure the Player's audio track as single-channel files. All channels must be recorded with a minimum of two channels per file. If you record as a single-channel file, the Dolby data will be corrupted.
- Each separate audio file may hold 1, 2, 4, 6, 8, 10, 12, 14, or 16 channels.

- Players must be configured to match the maximum expected bandwidth of clips to be played on that output. If a clip exceeds the maximum expected bandwidth, during playback the Player will fail — producing either silence or a reduced number of audio tracks limited by the Player.
- Back-to-back playout of mixed audio formats (.aiff or .wav) is supported.

## About Audio Track Combinations

Following is a list of all possible file combinations that may be created:

- If 1 total channel, then 1 channel per file
- If 2 total channels, then 1, 2 channels per file
- If 4 total channels, then 1, 2, 4 channels per file.
- If 6 total channels, then 1, 2, 6 channels per file (existing)
- If 8 total channels, then 1, 2, 4, 8 channels per file
- If 10 total channels, then 1, 2, 10 channels per file (new)
- If 12 total channels, then 1, 2, 4, 12 channels per file (new)
- If 14 total channels, then 1, 2, 14 channels per file (new)
- If 16 total channels, then 1, 2, 4, 8, 16 channels per file

Note that the number of available channels per file divides evenly into the total number of channels.

## Configuring Audio Scrub

Audio scrub mode provides a higher quality audio output, helpful to video editors and operators when jogging or shuttling through content. Audio scrub mode is supported on the MediaPort 5320, 5220, 5400, 5500, 5620, and 7000 series.

The audio scrub feature works for up to four channels of audio. When scrub mode is enabled, regardless of how the audio tracks are grouped, the first four channels are scrubbed and the remaining channels are muted.

For the MediaPort 7xxx series, audio scrub does not require any configuration. For the MediaPort 5xxx series, in order to configure a player with audio scrub, the attached MediaPort or MediaDeck Module must first be set for Audio Scrub Mode. Note that in order to enable the Audio Scrub feature, any players configured for Proxy Record must first be deactivated due to bandwidth constraints. The two modes cannot be configured at the same time.

Perform the following procedures in the order listed below.

### Configuring your MediaPort or MediaDeck Module for Audio Scrub



**NOTE:** This procedure applies to the 5220, 5320, and 5600 series MediaPorts. If you are using the MediaPort 5500, or 5400 series, continue to [Configuring a Player for Audio Scrub](#).

---

#### To configure your MediaPort or MediaDeck Module for Audio Scrub:

1. From the **System Diagram** page, click the icon for the MediaPort or MediaDeck Module you will use to play audio scrub material. Its **MediaPort Properties** page appears.
2. Under **General Information**, scroll to the **Proxy Record Mode versus Audio Scrub Play Mode** section.

This section will show either **Proxy Record** mode enabled or **Audio Scrub** mode enabled. They cannot both be enabled at the same time. If the status under **After Last Reboot** and **After Next Reboot** shows **Audio Scrub Play Mode** then continue to [Configuring a Player for Audio Scrub](#).

If the status shows **Proxy Record** then do the following:

- Click **Set Audio Scrub Play Mode**.

Proxy Record Mode versus Audio Scrub Play Mode	After Next Reboot	After Last Reboot
	Proxy Record	Set Audio Scrub Play Mode

A warning message appears indicating that all players attached to this MediaPort which are configured for Proxy Record must be deactivated before you activate players configured for Audio Scrub, otherwise their performance will be affected. Click **OK**.

- If you have players that are configured for Proxy Record, deactivate those players at this time. Refer to [Activating and Deactivating Players](#).
- Restart the MediaPort or MediaDeck Module in order for the changes to take affect. Refer to [Rebooting the MediaPort](#).
- Continue to [Configuring a Player for Audio Scrub](#).

## Configuring a Player for Audio Scrub

To configure a player for Audio Scrub:

- Follow the first 9 steps in [Creating a Player](#) to create an **MPEG Play Only** or **Play and Record** player (SD or HD).
- Connect the track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions. The following MediaPorts support audio scrub: MediaPort 5620, 5500, 5400, 5320, 5220, and 7000 series.
- Follow the steps in [Adding Audio Tracks](#) to add an audio track.
- Attach the audio track to the appropriate MediaPort. Refer to [Attaching Devices and Setting Conversion Options](#) for instructions.
- The audio track includes the **Audio Scrub Play** check box (see [Figure 14–33](#)).

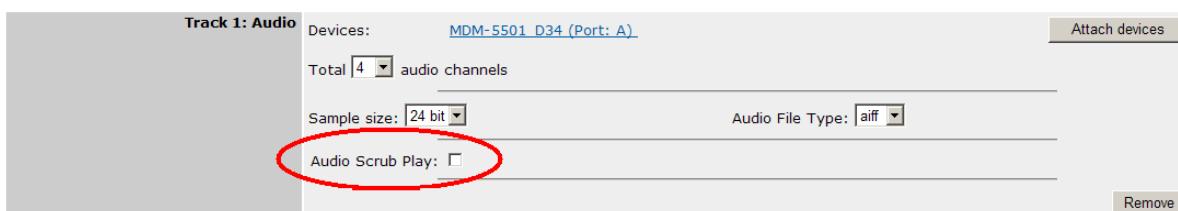


Figure 14–33: Audio Scrub Play check box

- Click the **Audio Scrub Play** check box.

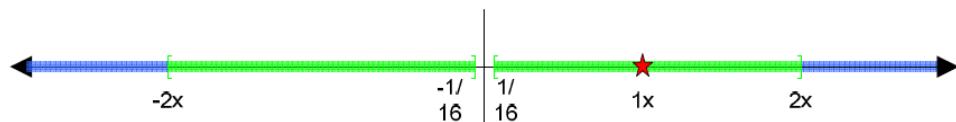


**NOTE:** If the check box for Audio Scrub Play does not appear, double-check that you have followed the steps in [Configuring your MediaPort or MediaDeck Module for Audio Scrub](#).

- Activate the player. Refer to [Activating and Deactivating Players](#).

## About Audio Scrub Rates and Behavior

Once a player has been enabled for audio scrub, the output audio is scrubbed whenever the player is operating between 1/16th and 2x play, forward or backward. Those regions are shown in green in [Figure 14-34](#).



[Figure 14-34: Audio Scrub Rates](#)

Above 2x forward or below -2x backward, the player reverts to “CD audio”, which is the same off-speed audio behavior used for non-audio scrub players. Those regions are shown in blue. Below 1/16th (for example, at 1/32nd), the player is muted rather than reverting to CD audio.

The red star in [Figure 14-34](#) marks the special case of normal, 1x playback. If the player jumps directly to 1x from a non-scrubbable rate (such as paused or greater than 2x), it will leave scrub mode and revert to normal audio play with all channels.

## Attaching Devices and Setting Conversion Options



**NOTE:** This section includes important information for setting up conversion or down conversion options.

### To connect a Player to a device:

1. Ensure that the first 9 steps in [Creating a Player](#) are complete.
2. For each track, click the **Attach Devices** button (within each track section) to display the **Attach Devices** page as shown in [Figure 14-35](#).

[Icon] **Attach devices to Track 1 (DVCPRO) on Player testGA.**

Select the devices to be attached to this track.  
Click the **Done** button when finished.

**Player Track List: Track 1 (DVCPRO)**

Device	Type	Status	Players (tracks) attached	Attach	Audio Embedding
MIP-1005_01665	DVB/ASI	Connected -- Error Alarm		<input type="checkbox"/>	
MIP-1010A_04972	DV/LGOP/IMX	Connected -- Error Alarm		<input type="checkbox"/>	
MIP-1002_01038	SDI/SDTI	Connected -- Error Alarm		<input type="checkbox"/>	

( \*\* Indicates active player. )

**Done**

[Figure 14-35: Attach Devices page](#)

- Note that the available fields and columns on this page will vary based on the MediaPort type.
3. In the **Attach** column, click the check box adjacent to the device (**MediaPort** or **Third-party Device**) that you wish to connect. The name of the current Player will appear in the **Players (tracks) attached** column. Repeat this selection for any other listed devices that you want to attach to this track.



**IMPORTANT:** The “type” of MediaPort that is attached to DV/MPEG tracks will determine if the input and/or output will be SDI (using a DV/MPEG model: MediaPort 1001a, 1003a, or 1010) or SDTI (using the SDI/SDTI model MediaPort 1002). To record or playback SDTI-CP, a track must be configured for 50Mbps IMX MPEG and attached to the SDI/SDTI model MediaPort 1002. HDCAM configured tracks must be attached to the SDI/SDTI model MediaPort 1002. Regardless of MediaPort type, data is always stored on disk as configured for the track.



**NOTE:** In SystemManager, all MediaPort 5XX2 series (for example, 5002, 5222, or 5322) appear as two separate 5XX1 MediaPorts respectively.

- When attaching video tracks to the MediaPort 3000, 4000, 5000, 6000, or 7000 series or ChannelPort, the **Channel** column appears. This column displays the available channels for attaching MPEG tracks. Click the drop-down arrow to select a different channel.



Select the devices to be attached to this track.  
If you connect more than one device to this track, pick the device to be used during record by selecting it in the **Recording Device** column.  
Click the **Done** button when finished.

Player Track List: Track 1 (MPEG)

Device	Type	Status	Players (tracks) attached	Attach	Channel	Recording Device	Horizontal Sample Rate	Time code format								
MDM-5321_D18	SD-HD/MPEG	Connected	MGR-1996 MGR-1998 MGR-1998-2 (track:1)	<input checked="" type="checkbox"/>	A		1920	<table border="1"> <tr> <td>Input</td> <td>Output</td> </tr> <tr> <td>VITC only</td> <td>LTC &amp; VITC</td> </tr> <tr> <td>Lines:</td> <td>14</td> </tr> <tr> <td></td> <td>16</td> </tr> </table>	Input	Output	VITC only	LTC & VITC	Lines:	14		16
Input	Output															
VITC only	LTC & VITC															
Lines:	14															
	16															

( \*\* Indicates active player. )

Figure 14-36: Attach Devices page options

- If you are working with a record-capable Player, in the **Recording Device** column, click the radio button for the *one device* (MediaPort or Third-party Device) that you want to use as the source of media during recording.
- When attaching video tracks to the MediaPort 5320 for recording HD content at frame rates of 25 or 29.97 Hz, the **Horizontal Sample Rate** column appears. Select the sample rate (either **1920** or **1440**) that applies to the content you are recording.
- If you are attaching audio or video tracks to a MediaPort 4010, the **Program Number** field appears. This field specifies the number for the program which should be extracted from the transport stream and demuxed. Enter a string of up to four characters in length, where each character is a hex digit (0-9, a-f, or A-F).



**NOTE:** The information in Step 8 only applies to the MediaPort 4100, 5400, 5500, and 7000 series, and ChannelPort. For all other MediaPorts, continue to step 9.

- Follow the steps for selecting Up or Down Conversion options that correspond with your model of MediaPort. Refer to one of the following sections:
  - [Selecting Up/Down Conversion options for the MediaPort 7000 Series and ChannelPort](#)
  - [Selecting Up/Down Conversion options for the MediaPort 5400 and 5500 Series](#)
  - [Selecting UP/Down Conversion options for the MediaPort 4100 Series](#)
- If you are working with an audio track and the device is capable of embedding and de-embedding audio in the SDI signal, a drop-down menu will appear in the **Audio Embedding** column. Note that this column only appears for AES/EBU tracks, or for all DV tracks without an accompanying AES/EBU track.

 **Attach devices to Track 1 (DVCPRO) on Player testGA.**

Select the devices to be attached to this track.  
Click the **Done** button when finished.

**Player Track List:** Track 1 (DVCPRO)

Device	Type	Status	Players (tracks) attached	Attach	Channel	Audio Embedding	Time code format
MIP-1005_01665	DVB/ASI	Connected -- Error Alarm					<b>Output</b> <input type="checkbox"/> LTC & VITC Lines: <input type="button" value="14"/> <input type="button" value="16"/>
MIP-1010A_04972	DV/LGOP/IMX	Connected -- Error Alarm	<a href="#">testGA_(track:1)</a>	<input checked="" type="checkbox"/>	A	Embedded	
MIP-1002_01038	SDI/SDTI	Connected -- Error Alarm		<input type="checkbox"/>			

( \*\* Indicates active player. )

**Choose the desired embedding option:**

- **None** — Audio information is transmitted and received on the MediaPort's AES/EBU connectors only.
    - For recording, audio will not be de-embedded from the SDI input signal. It will instead be recorded from the AES/EBU connectors.
    - For playback, audio will not be embedded in the SDI output signal. It will instead be played out from the AES/EBU connectors.
  - **Embedded** — The MediaPort uses audio data that is embedded in the SDI signal for recording and playback.
    - For recording, audio will be de-embedded from the SDI input signal. Any signal on the AES/EBU connectors will be ignored.
    - For playback, all eight audio channels (at full 24-bit resolution) will be embedded in the SDI output signal.
  - **Limited** — The following actions occur:
    - For recording, all audio data will be de-embedded from the SDI input signal. Signals on the AES/EBU connectors will be ignored.
    - For playback, the MediaPort only embeds two pairs of audio channels (at 20-bit resolution) into the SDI output signal.
10. If the Player is record capable, the Player's **Record Timecode Source** is "External," and the recording device is capable of recording LTC timecode, under **Time code Format**, in the timecode **Input** drop-down box, select **LTC only**, **VITC only**, or **Reference VITC**.
- **LTC only**: select to accept LTC input over the MediaPort's LTC input connector.



**NOTE:** LTC as a Record timecode source is not available for HDCAM configured players. External timecode for HDCAM always comes from the ancillary/horizontal data in the HDCAM SDTI stream.

- **VITC only**: select to read VITC from the MediaPort's SDI input connector. If selected, you must also select the desired Line number.
  - **Reference VITC**: if selected, the timecode is derived the reference input VITC.
11. If the Player is play capable, the Player's **Playback Timecode Source** is "From Clip," under **Time code Format**, in the **Output** drop-down box, select either **LTC only** or **VITC & LTC**.
- Select **LTC only** to output LTC only to the MediaPort's LTC output connector.
  - Select **VITC & LTC**, and then select the desired Line number to insert timecode into those lines on the MediaPort's SDI output connector.



**NOTE:** For the MediaPort 5320 and 5220, the output timecode options that you select on the **Attach Devices** page apply to the channel that you have selected in the **Assignable LTC Output** field of the **MediaPort Properties** page for the attached MediaPort. Refer to [Viewing MediaPort Properties](#), for a description of the **Assignable LTC Output** field.

12. Click **Done** to return to the **Edit Player** page. At this point, the Player's selected track is connected to the selected Device(s). The device(s) will be listed in the track section.
13. Repeat the entire connection procedure starting with [Step 2](#), for each additional track that you wish to connect.

## Selecting Up/Down Conversion options for the MediaPort 7000 Series and ChannelPort

Make sure you have completed steps 1-7 of [Attaching Devices and Setting Conversion Options](#) before continuing. Refer to [Figure 14-37](#) in completing this procedure.

Primary Output Video Format	Secondary Output Video Format	Video Definition Converter	
625 as 4x3 aspect  <b>VANC line placement</b> OP-47 Auto ▾ SMPTE-2031 Auto ▾ SMPTE-2016-3 (AFD) Auto ▾  <input checked="" type="checkbox"/> Reserve VANC lines <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22	625 as 4x3 aspect  <b>Ext Converter</b> OFF ▾ <b>VANC line placement</b> OP-47 Auto ▾ SMPTE-2031 Auto ▾ SMPTE-2016-3 (AFD) Auto ▾  <input checked="" type="checkbox"/> Reserve VANC lines <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22	<b>Up</b> Internal, Pillar ▾  <b>Down</b> Internal, Letter ▾	<b>4:3 AFD</b> 0000 Not Specified ▾  <b>16:9 AFD</b> 0000 Not Specified ▾

Figure 14-37: Up/Down Conversion Options

### To select up/down conversion options:

1. In the **Primary Output Video Format** column, select the desired video format or select Native, which will output the same format as the video clip that is playing. For example, when SD material is playing, the output is SD SDI and when HD material is playing, the output is HD SDI. See [About Native Mode](#) for details.



**IMPORTANT:** Harmonic recommends using Native Mode for preview only, and not for live, on-air playout. When a player is in Native Mode and different clip types (with different formats or frame rates) are loaded on the timeline, there will be some delay between transitions.

The video source designated in the Player Properties page will be converted, or passed through, as selected. For example, if you selected a standard definition format on the Player Properties page, and a high definition format in the Primary Output Video Format menu, the video would be up-converted. Note that for standard definition formats, you may also choose the desired aspect ratio: 4x3, 16x9, or mixed aspect.

If you wish to specify VANC line placement for the Primary Output, under **VANC line placement** you may configure the following:

- **OP-47** (for 25 or 50 Hz only): Select the VANC line to be used for OP-47 data. Selecting **Auto** will allow Spectrum to automatically select the VANC line. Selecting **Suppress** will cause the closed caption data to be suppressed.
  - **SMPTE-2031**(for 25 or 50 Hz only): Select the VANC line to be used for SMPTE-2031 data.Selecting **Auto** will allow Spectrum to automatically select the VANC line. Selecting **Suppress** will cause the closed caption data to be suppressed.
  - **SMPTE-334-2 (CC)**: Select the VANC line to be used for closed caption data. Selecting **Auto** will allow Spectrum to automatically select the VANC line. Selecting **Suppress** will cause the closed caption data to be suppressed.
  - **SMPTE-2016-3 (AFD)**: Select the VANC line to be used for AFD data. Selecting **Auto** will allow Spectrum to automatically select the VANC line. Selecting **Suppress** will cause the AFD data to be suppressed.
  - **Reserve VANC lines**: Click to open a list of check boxes that correspond to VANC lines. Select the check boxes for the VANC lines that you wish to reserve for a specific use. Any VANC lines that are left un-selected may be used for VANC types other those indicated in the **VANC line placement** drop-down menus.
2. In the **Secondary Output Video Format** column, select the desired video format or Native for the secondary output.

If you wish to specify VANC line placement for the Secondary Output, under **VANC line placement** you may configure the following:

- **OP-47** (for 25 or 50 Hz only): Select the VANC line to be used for OP-47 data. Selecting **Auto** will allow Spectrum to automatically select the VANC line. Selecting **Suppress** will cause the closed caption data to be suppressed.
- **SMPTE-2031**(for 25 or 50 Hz only): Select the VANC line to be used for SMPTE-2031 data.Selecting **Auto** will allow Spectrum to automatically select the VANC line. Selecting **Suppress** will cause the closed caption data to be suppressed.
- **SMPTE-334-2 (CC)**: Select the VANC line to be used for closed caption data. Selecting **Auto** will allow Spectrum to automatically select the VANC line. Selecting **Suppress** will cause the closed caption data to be suppressed.
- **SMPTE-2016-3 (AFD)**: Select the VANC line to be used for AFD data. Selecting **Auto** will allow Spectrum to automatically select the VANC line. Selecting **Suppress** will cause the AFD data to be suppressed.
- **Reserve VANC lines**: Click to open a list of check boxes that correspond to VANC lines. Select the check boxes for the VANC lines that you wish to reserve for a specific use. Any VANC lines that are left un-selected may be used for VANC types other those indicated in the **VANC line placement** drop-down menus.

- The **Ext Converter** drop down menu allows you to specify the number of reference fields of external processing delay to be used when connecting the MediaPort 7000 series to an external converter to perform up or down conversion. Select a value between 1 and 12. The default is OFF.

Note the following guidelines when performing external conversion:

- To use an external converter, connect the secondary output connector for each MediaPort channel to the converter, and then connect the output from the converter to the input connector for that channel on the MediaPort. See [Figure 14-41](#) for an example.
- You must specify the video format for the secondary output. This will identify what kind of input is accepted by the external converter.
- The video format that you specify for the primary output defines the output of that connector.
- You must configure the external converter to provide an output format that matches the chosen primary output format.
- Make sure to specify the up/down conversion settings for the primary output. The MediaPort's internal conversion will be used on the primary output for any conversions that don't match the configuration of the external converter. For example, the external converter may perform 720p to 1080i conversion, and the internal converter may perform SD to 1080i up-conversion.

- In the **Video Definition Converter** column, select the appropriate up and down conversion options by reviewing the following information.
- Up:** This menu displays aspect ratio adjustment options when frames are being up converted from SD to HD. Click the drop-down arrow to select from the following:
  - Internal, Pillar:** Specifies that black bars should be inserted on the sides as necessary to fill the screen.
  - Internal, Crop:** Specifies that the top and bottom of frames should be cropped and black bars should be inserted on the sides as necessary to fill the screen. When a frame is too large horizontally, the sides of the frame should be cropped and black bars inserted on the top and bottom to fill the screen.
  - Internal, Full:** Specifies that black bars should be inserted above and below the frame to maintain the aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
  - Internal, Anamorphic:** Specifies that frames should be stretched horizontally and vertically to fill an entire 16:9 aspect ratio HD screen.
- 4:3 AFD:** This menu allows you to choose the AFD value you wish to apply to the video output. The options are shown in [Table 14-1](#).

**Table 14-1: 4:3 AFD Values**

AFD value	Definition
0000	Not Specified
1000	4x3 image full frame (same as coded frame)
1001	4x3 image full frame
1010	16x9 image as letterbox
1011	14x9 image as letterbox

AFD value	Definition
1101	4x3 image with alt. 14x9 center
1110	16x9 image with alt. 14x9 center as letterbox
1111	16x9 image with alt. 4x3 center as letterbox

- **Down:** This column displays aspect ratio adjustment options when frames are being down converted from HD to SD. Click the drop-down arrow to select from the following:
  - **Internal, Crop:** Specifies that the top and bottom of the frame should be cropped and black bars should be inserted on the sides as necessary to fill the screen. When a frame is too large horizontally, the sides of the frame are cropped and black bars are inserted on the top and bottom to fill the screen.
  - **Internal, Letter:** Specifies that when a frame fails to fill a screen vertically, black bars should be inserted above and below the frame to maintain the original aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
  - **Internal, Full:** Specifies that black bars should be inserted above and below the frame to maintain the aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
  - **Internal, Anamorphic:** Specifies that frames should be compressed horizontally and vertically to fit into a 4:3 aspect ratio SD screens.
- **16:9 AFD:** This menu allows you to choose the AFD value you wish to apply to the video output. The options are shown in [Table 14-1](#).

Table 14-2: 16:9 AFD Values

AFD value	Definition
0000	Not Specified
1000	16x9 image full frame
1001	4x3 image as pillarbox
1010	16x9 image as frame protected
1011	14x9 image as pillarbox
1101	4x3 image with alt. 14x9 center as pillarbox
1110	16x9 image with alt. 14x9 center
1111	16x9 image with alt. 4x3 center

Refer to [Figure 14-39](#) and [Figure 14-40](#) for a visual representation of frame output for each of the aspect ratio options.



**NOTE:** With this release of SystemManager, up converting or down converting subtitles or teletext that use the OP42 and OP47 standards is now a MediaPort-wide setting, which affects all players attached to that MediaPort. For instructions on configuring your MediaPort to convert subtitles or teletext refer to [Configuring Subtitle Conversion](#).

4. Once you have selected your conversion options, continue to step 9 of [Attaching Devices and Setting Conversion Options](#).

## Selecting Up/Down Conversion options for the MediaPort 5400 and 5500 Series

Make sure you have completed steps 1-7 of [Attaching Devices and Setting Conversion Options](#) before continuing. Refer to [Figure 14–38](#) for the following steps.

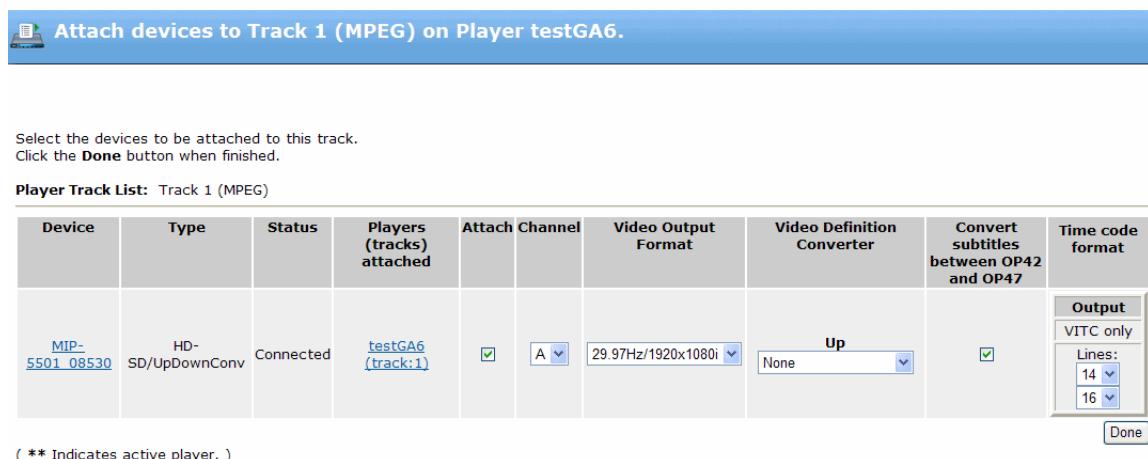


Figure 14–38: Up/Down Conversion options

### To select up/down conversion options:

1. (For the MediaPort 5500 series only) In the **Video Output Format** column, select the desired video format or select Native, which will output the same format as the video clip that is playing. For example, when SD material is playing, the output is SD SDI and when HD material is playing, the output is HD SDI. See [About Native Mode](#) for details.



**IMPORTANT:** Harmonic recommends using Native Mode for preview only, and not for live, on-air playout. When a player is in Native Mode and different clip types (with different formats or frame rates) are loaded on the timeline, there will be some delay between transitions.

The video source designated in the Player Properties page will be converted, or passed through, as selected. For example, if you selected a standard definition format on the Player Properties page, and a high definition format in the Primary Output Video Format menu, the video would be up-converted. Note that for standard definition formats, you may also choose the desired aspect ratio: 4x3, 16x9, or mixed aspect.

2. In the **Video Definition Converter** column, select the appropriate up and down conversion options by reviewing the following information.
  - **Up:** This menu displays aspect ratio adjustment options when frames are being up converted from SD to HD. Click the drop-down arrow to select from the following:
    - **None:** Specifies that no up conversion adjustment should take place.
    - **Internal, Pillar:** Specifies that black bars should be inserted on the sides as necessary to fill the screen.
    - **Internal, Crop:** Specifies that the top and bottom of frames should be cropped and black bars should be inserted on the sides as necessary to fill the screen. When a frame is too large horizontally, the sides of the frame should be cropped and black bars inserted on the top and bottom to fill the screen.

- Internal, Full:** Specifies that black bars should be inserted above and below the frame to maintain the aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
  - Internal, Anamorphic:** Specifies that frames should be stretched horizontally and vertically to fill an entire 16:9 aspect ratio HD screen.
- **Down:** This column displays aspect ratio adjustment options when frames are being down converted from HD to SD. Click the drop-down arrow to select from the following:
  - None:** Specifies that no down conversion aspect ratio adjustment should take place.
  - Internal, Crop:** Specifies that the top and bottom of the frame should be cropped and black bars should be inserted on the sides as necessary to fill the screen. When a frame is too large horizontally, the sides of the frame are cropped and black bars are inserted on the top and bottom to fill the screen.
  - Internal, Letter:** Specifies that when a frame fails to fill a screen vertically, black bars should be inserted above and below the frame to maintain the original aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
  - Internal, Full:** Specifies that black bars should be inserted above and below the frame to maintain the aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
  - Internal, Anamorphic:** Specifies that frames should be compressed horizontally and vertically to fit into a 4:3 aspect ratio SD screens.

Refer to [Figure 14-39](#) and [Figure 14-40](#) for a visual representation of frame output for each of the aspect ratio options.



**NOTE:** With this release of SystemManager, up converting or down converting subtitles or teletext that use the OP47 standards is now a MediaPort-wide setting, which affects all players attached to that MediaPort. For instructions on configuring your MediaPort to convert subtitles or teletext refer to [Configuring Subtitle Conversion](#).

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3. Once you have selected your conversion options, continue to step 9 of [Attaching Devices and Setting Conversion Options](#).

## Selecting UP/Down Conversion options for the MediaPort 4100 Series

Make sure you have completed steps 1-7 of [Attaching Devices and Setting Conversion Options](#) before continuing.

### To select up/down conversion options:

1. In the **Video Definition Converter** column, select the appropriate up and down conversion option by reviewing the following information for the MediaPort 4100.
- **Up:** This column displays aspect ratio adjustment options when frames are being up converted from SD to HD. Click the drop-down arrow to select from the following:
  - None:** Specifies that no up conversion adjustment should take place.
  - Internal, Crop:** Specifies that the top and bottom of frames should be cropped and black bars should be inserted on the sides as necessary to fill the screen. When a frame is too large horizontally, the sides of the frame should be cropped and black bars inserted on the top and bottom to fill the screen.
  - Internal, Pillar:** Specifies that black bars should be inserted on the sides as necessary to fill the screen.

- Internal, Full:** Specifies that black bars should be inserted above and below the frame to maintain the aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
  - Internal, Anamorphic:** Specifies that frames should be stretched horizontally and vertically to fill an entire 16:9 aspect ratio HD screen.
  - External, No Delay:** Specifies that no adjustment should be made to compensate for delay through an external SD up converter.
  - External, Delay 1 Frame:** Specifies that a 1 frame delay should be added to compensate for delay through an external SD up converter.
  - External, Delay 2 Frames:** Specifies that a 2 frame delay should be added to compensate for delay through an external SD up converter.
  - External, Delay 3 Frames:** Specifies that a 3 frame delay should be added to compensate for delay through an external SD up converter.
  - External, Delay 4 Frames:** Specifies that a 4 frame delay should be added to compensate for delay through an external SD up converter.
- **Down:** This column displays aspect ratio adjustment options when frames are being down converted from HD to SD. Click the drop-down arrow to select from the following:
  - None:** Specifies that no down conversion aspect ratio adjustment should take place.
  - Internal, Crop:** Specifies that the top and bottom of the frame should be cropped and black bars should be inserted on the sides as necessary to fill the screen. When a frame is too large horizontally, the sides of the frame are cropped and black bars are inserted on the top and bottom to fill the screen.
  - Internal, Letter:** Specifies that when a frame fails to fill a screen vertically, black bars should be inserted above and below the frame to maintain the original aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
  - Internal, Full:** Specifies that black bars should be inserted above and below the frame to maintain the aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
  - Internal, Anamorphic:** Specifies that frames should be compressed horizontally and vertically to fit into a 4:3 aspect ratio SD screens.
  - External, No Delay:** Specifies that no adjustment should be made to compensate for delay through an external HD down-converter.
  - External, Delay 1 Frame:** Specifies that a 1 frame delay should be added to compensate for delay through an external HD down-converter.
  - External, Delay 2 Frames:** Specifies that a 2 frame delay should be added to compensate for delay through an external HD down-converter.
  - External, Delay 3 Frames:** Specifies that a 3 frame delay should be added to compensate for delay through an external HD down-converter.
  - External, Delay 4 Frames:** Specifies that a 4 frame delay should be added to compensate for delay through an external HD down-converter.

Refer to [Figure 14–39](#) and [Figure 14–40](#) for a visual representation of frame output for each of the “internal” aspect ratio options.

Refer to [Connecting External Up/Down Converters to Spectrum MediaPorts](#) for a visual representation on how to connect an external up/down converter to a Spectrum MediaPort.

2. Once you have selected your conversion options, continue to step 9 of [Attaching Devices and Setting Conversion Options](#).

## About Native Mode

Selecting Native Mode causes the player to set the format of the video output to the same format of the video clip that is playing. For example, when SD material is playing, the output is SD SDI, and when HD material is playing, the output is HD SDI. This feature is supported on the MediaPort 5320, 5500, 5600, and 7000 series.



**IMPORTANT:** Harmonic recommends using Native Mode for preview only, and not for live, on-air playout. When a player is in Native Mode and different clip types (with different formats or frame rates) are loaded on the timeline, there will be some delay between transitions.

Note that players only play clips with matching or half-rate frame rates. For example, a 50Hz player can play 50Hz and 25Hz clips. Whereas, a 25Hz player can only play 25Hz clips. This means a 50Hz player can play 625, 1080i25, and 720p50 clips while a 25Hz player configured for native mode can only play 625 and 1080i/25 clips.

Make sure to load clips on the timeline before the player is cued for play. The video output format cannot be changed midstream so, for MediaPorts that support up/down conversion, playing non-matching clips back-to-back will result in the clips being up-converted or down-converted. For MediaPorts that do not support up/down conversion, an attached player in Native Mode will only play clips with matching frame rates (for example, a 50Hz player only plays 720p50 clips). For these MediaPorts, if you play successive non-matching clips, the output will be black.

*Table 14–3* shows the Native Mode playout options for each supported MediaPort and player configuration.

**Table 14–3: Native Mode Limitations**

MediaPort	Player Frame Rate	Native Play types
MediaPort 5320	Interlaced	SD, 1080i
MediaPort 5320	Progressive	720p
MediaPort 5500	Interlaced	SD, 1080i
MediaPort 5500	Progressive	SD, 720p
MediaPort 5600	Interlaced	1080i
MediaPort 5600	Progressive	720p
MediaPort 7000	Interlaced	SD, 1080i
MediaPort 7000	Progressive	SD, 1080i, 720p

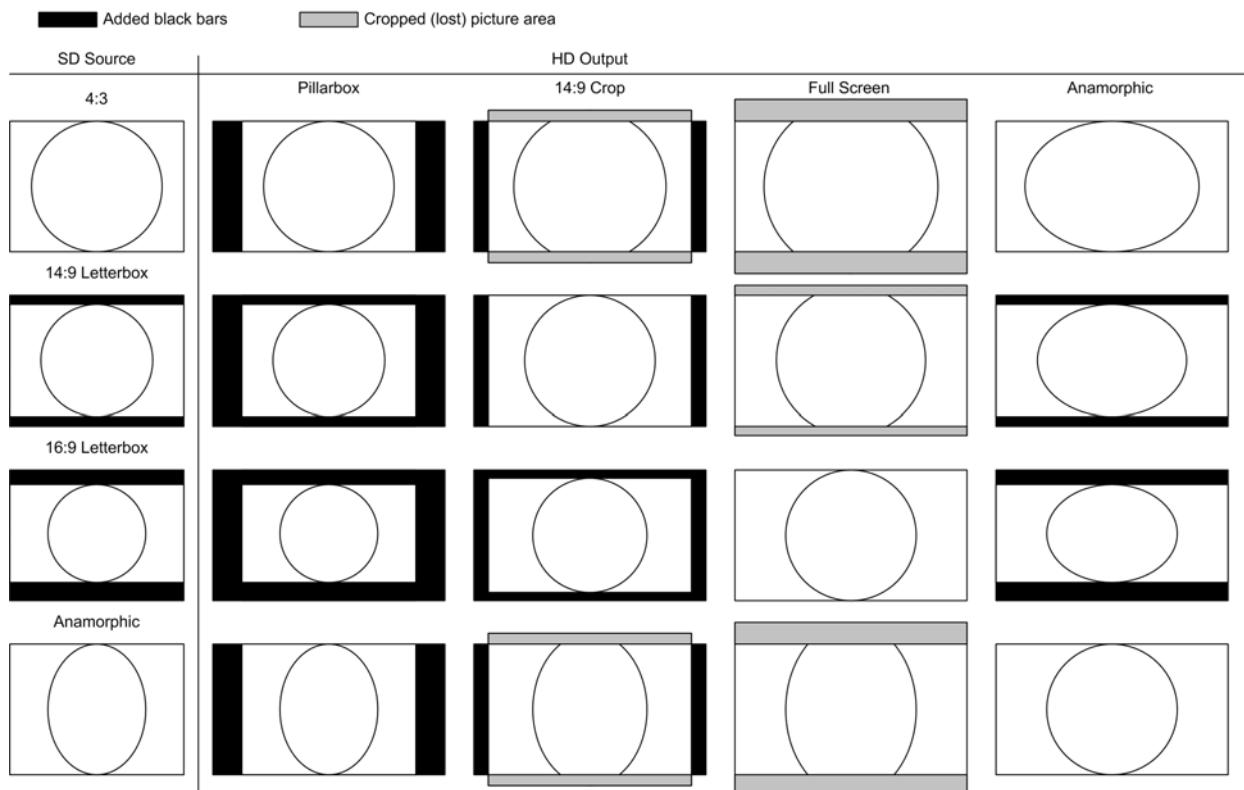
## About Configuring for Cross Conversion

The MediaPort 7000 series is capable of playing out different video frame rates on the same timeline continuously, which is known as cross conversion. To configure a player to do cross conversion, you must select the higher of the two possible frame rates. For example, if you want to play out both 720p and 1080i on the same timeline, you must select a frame rate of 50Hz rather than 25Hz. Likewise, for NTSC, if you want to play out both 59.94Hz and 29.97Hz on the same timeline, you must select 59.94Hz as the player frame rate in SystemManager.

## About Up Conversion or Down Conversion Options

To perform Up Conversion or Down Conversion, follow the steps provided in [Attaching Devices and Setting Conversion Options](#). Note that for some video content, which contains AFD information, the aspect ratio conversion options are contained within the clip. For more information about AFD support, refer to [About AFD Support](#). The following diagrams illustrate the frame output for up or down conversion.

[Figure 14–39](#) displays frame output associated with each Up Conversion Aspect Ratio option.



[Figure 14–39: High Definition Up Conversion Aspect Ratio Results](#)

[Figure 14–40](#) displays frame output associated with each Down Conversion Aspect Ratio option:

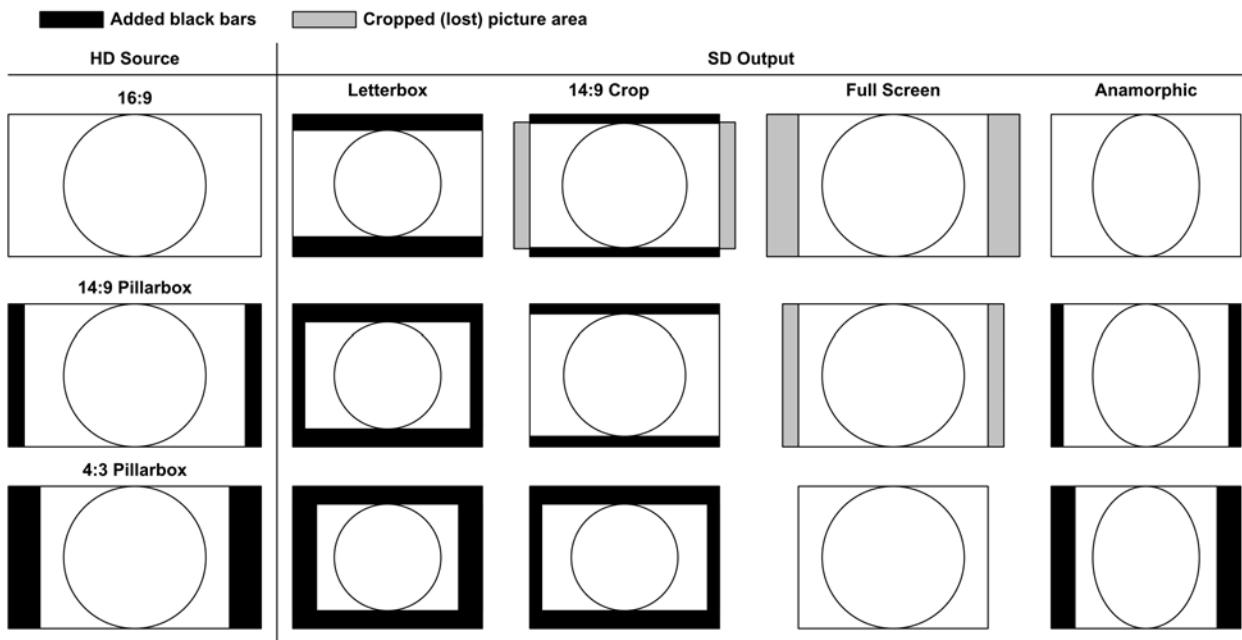


Figure 14–40: High Definition Down Conversion Aspect Ratio Results

Refer to [Attaching Devices and Setting Conversion Options](#) for details on how to select Up conversion and Down conversion options

## Connecting External Up/Down Converters to Spectrum MediaPorts

Refer to [Figure 14-41](#) when connecting an external up/down converter to a MIP-7000 series MediaPort.

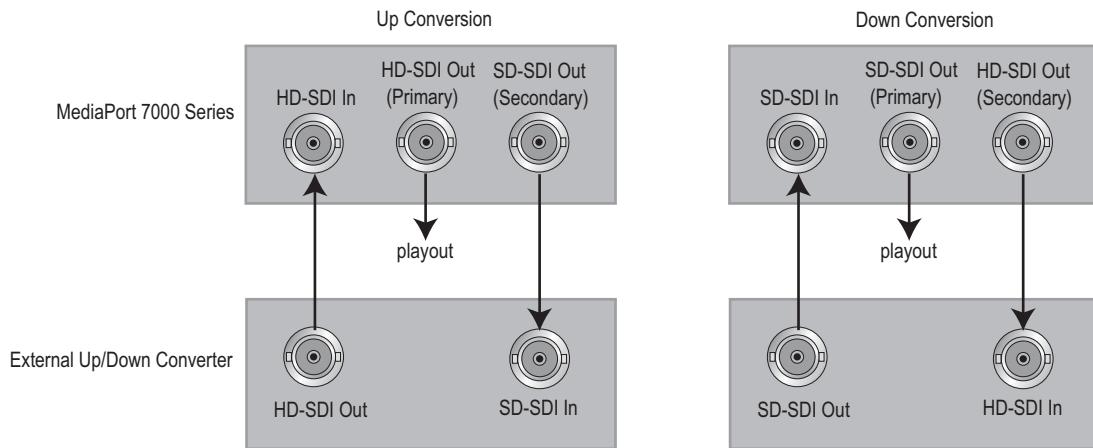


Figure 14–41: Attaching an Up/Down Converter to MediaPort 7000 series

Note that only the primary output connector for each channel of the MediaPort is available. The secondary output connector and the input connector on the MediaPort are connected to the external converter as shown. For details on configuring your player to be used with an external converter, refer to [Selecting Up/Down Conversion options for the MediaPort 7000 Series and ChannelPort](#).

Refer to [Figure 14–42](#) when connecting an external up/down converter to a MIP-4100 series MediaPort.

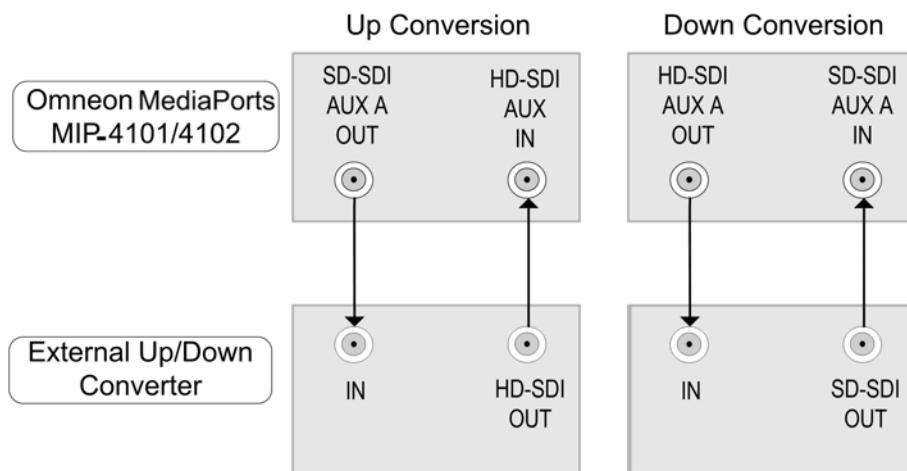


Figure 14–42: Attaching an Up/Down Converter to MediaPort 4100 series

## Player to Player Dubbing

To dub from one player to another using the Player-to-Player Dubbing feature:

- From the **Player List** page, ensure that the player you wish to use as your Source player is shown as **Inactive**, and that the player you wish to use as your Target player is also shown as **Inactive**.
- Click the **Edit** link for the Source player to open the **Edit Player** page. Then scroll to the bottom of the page to locate the **Player-to-Player Dubbing Configuration** section, as shown in [Figure 14–43](#).

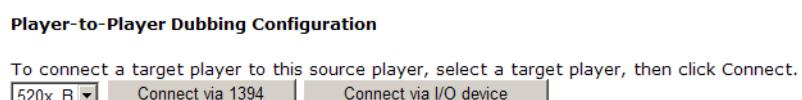


Figure 14–43: Connecting to a Target Player

- Using the drop-down box, select the Target player. Then, depending on your system configuration, click either **Connect via 1394** or **Connect via I/O device**.
- Activate the Source player by clicking the **Activate** button at the bottom of the Edit Player page. This will also activate the Target player.

The **Player Properties** page for both the active Source and Target players will display a message indicating the Source and Target players, including a hyperlink to each player (see [Figure 14–44](#)).



Figure 14–44: Player-to-Player Dubbing Status Message

The Player List page will also indicate which player is a Source and Target.

## Disconnecting Devices

### To disconnect devices from tracks on a Player:

1. To disconnect devices, ensure that the Player is deactivated first.

Refer to [Activating and Deactivating Players](#) for instructions.

2. On the **Edit Player** page, locate the track that you want to disconnect, and click the **Attach Devices** button to display the **Attached Devices** page.
3. On the **Attached Devices** page, clear the box in the **Attach Device** column for the device(s) that you want to disconnect. Note that you can disconnect one device and leave others connected.
4. Click **Done** to return to the **Edit Player** page.
5. Repeat steps 2 and 3 for other tracks that you wish to disconnect.
6. Click **Done** to return to the **Player List**.

## Changing the Player State: Activating and Deactivating, Enabling and Disabling

In previous releases of SystemManager, activating a player allowed you to use that player for playing or recording, and only one player could be activated per MediaPort channel at a time. With this release, in order to use a player to play or record, you must activate it and enable it as well using the **Activate and Enable** button on the Edit Player page or the **Enable** button or link on the Player List page.

With this functionality, and the latest release of Spectrum, you can activate multiple players per MediaPort channel at a time, allowing an automation system to switch between players and enable or disable a player as needed. To take advantage of this functionality, refer to [Using Auto Input Sense Recording](#).

Note the following important points:

- An activated player can be either enabled or disabled. You may have several players activated per MediaPort channel at a time but ONLY ONE can be enabled.
- A player must be activated and enabled in order to play or record. A disabled player cannot be used.

- This release includes an **Activate as disabled** button on the Edit Player page, which sends the player definition to the Spectrum device but does not enable the player. This may be useful if you are using an automation system to automatically enable different players at different times.
- If a player state has been changed by some means other than SystemManager (for example by automation or by using the player API), SystemManager will not detect that change until you click on the **Refresh Player List** button on the Player List page.

## Activating and Deactivating Players

Use one of the following methods to activate or deactivate a player:

- To activate from the **Player List** page, click the **Enable** hyperlink for the desired Player, or select multiple Players and click the **Enable Selected** button. This activates and enables the selected player(s). If the Player cannot be activated, an **Error Message** appears that details the reasons.



**NOTE:** Only one player can be activated and enabled per MediaPort channel at a time.

- To activate from the **Edit Player** page, click **Activate and Enable** or **Activate as disabled** at the bottom of the page.

Clicking **Activate as disabled** sends the player definition to the Spectrum device. This may be useful if you are using an automation system to automatically enable different players at different times.

- To deactivate a Player from the **Player List** page, click the **Deactivate** hyperlink for the desired Player, or select multiple Players and click the **Deactivate Selected** button.
- To deactivate a Player from the **Edit Player** page, click the **Deactivate** button at the bottom of the page.

## Enabling and Disabling Players

Use one of the following methods to enable or disable a player:

- To enable a player from the **Player List** page, click the **Enable** hyperlink for the desired Player, or select multiple Players and click the **Enable Selected** button. This activates and enables the selected player(s). If the Player cannot be enabled, an **Error Message** appears that details the reasons.



**NOTE:** Only one player can be activated and enabled per MediaPort channel at a time.

- To enable a player from the **Edit Player** page, click **Activate and Enable** at the bottom of the page.
- To disable a Player from the **Player List** page, click the **Disable** hyperlink for the desired Player, or select multiple Players and click the **Disable Selected** button.
- To disable a Player from the **Edit Player** page, click the **Disable** button at the bottom of the page.

## Using Auto Input Sense Recording

With Spectrum 6.4 and SystemManager 5.19 or later, if you are using a MediaPort 5xxx series or MediaPort 7xxx series capable of recording, you can now attach several players to a single MediaPort channel and allow the server to automatically select one for recording.

Note the following important points:

- The Spectrum server will automatically select an appropriate player from a set of players attached to a MediaPort once it detects either a CueRecord command or that a new clip is attached to an empty, stopped timeline, and the players are correctly configured to record.
- The video input must be stable and correct at the time the server detects a CueRecord or that a new clip is attached on an empty stopped timeline. Note that the MediaPort should sense the new video input within a half second of a stable input. This may add up to a half second to process the above commands.
- Make sure only one player in a set of players attached to a MediaPort channel is enabled at one time. Spectrum does not prevent you from enabling multiple players, which will result in record/playback problems.
- Spectrum only switches players automatically when the currently active player is stopped and the timeline is empty. For example, this means automation must stop and eject all clips after recording in order for Spectrum to switch to the correct player for payout.
- Make sure the set of players attached to the MediaPort are all be configured for the same frame rate family. All attached players must either be 25 Hz and 50 Hz, or they must all be 29.97 Hz and 59.94 Hz. You cannot mix a 25 Hz players with 29.97 Hz players.

### To configure players to enable Auto Sense Recording:

1. Make sure all the players you wish to use are attached to the same MediaPort channel and configured to record. For details, refer to [Creating a Player](#) and [Attaching Devices and Setting Conversion Options](#).

If you wish to play after recording, make sure the first player you wish to use is configured for play and record.



**NOTE:** If you wish to use the Auto Sense feature to play and record media with multiple frame rates (within the same frame rate family), do not configure multiple Play and Record players. Instead, configure only one player for Play and Record and make sure the frame rate set is set high enough to play out all the necessary frame rates. And then create multiple Record players configured to record the desired frame rates. The Auto Sense Recording feature will not work correctly with multiple Play and Record players.

2. Activate and Enable the first player by using the **Activate** and **Enable** buttons. For details, refer to [Changing the Player State: Activating and Deactivating, Enabling and Disabling](#).
3. For all subsequent players, configure them as **Activated** and **Disabled** by using the **Activate as disabled** button. For details, refer to [Changing the Player State: Activating and Deactivating, Enabling and Disabling](#).

## Deleting Players

### To delete a Player:

1. On the **Player List**, ensure that the Player to be deleted have been deactivated. Refer to [Activating and Deactivating Players](#) for instructions.
2. Once deactivated, click the **Delete Hyperlink** for the desired Player, or select multiple Players and click **Delete Selected**. A warning dialog appears.

3. Click **OK** to delete the Player(s).

## Editing a Player

**To edit (or modify) a Player that has already been created:**

1. On the **Player List**, ensure that the Player that you wish to edit has been deactivated.
- Refer to *Activating and Deactivating Players* for instructions.
2. Click the **Edit Hyperlink** to display the **Edit Player** page.
3. Follow the procedures beginning with step 7 in *Creating a Player*.

## Viewing Player Properties

On the **Player Properties** page you can view properties as well as verify a selected Player's parameters, adjust that Player's output timing, deactivate the Player and launch ClipTool.

**To view Player properties:**

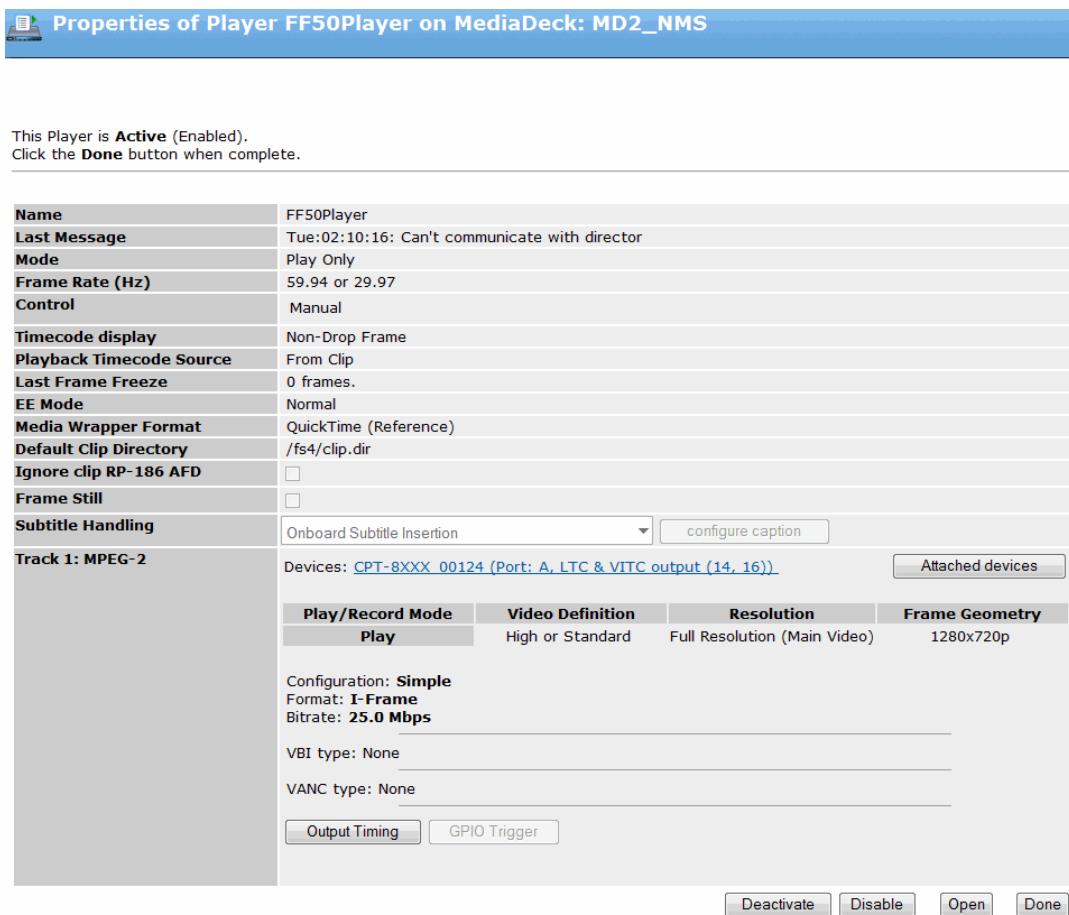
1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. In the left-hand column, click the **Player Configuration** icon.
3. On the **Player Configuration** page, click the icon for the MediaDirector host for the required Player. The **Player List** for the selected MediaDirector host appears (*Figure 14–45*).

The screenshot shows a table of player configurations. The columns are: Player Name, Status, and Actions. The actions include Edit, Delete, and Activate, each with a checkbox. Below the table are buttons for activating or deactivating selected players, selecting all players, and clearing the selection.

Player List for MediaDirector: D4-01042HO_Wil			
Total number of active players: 0.		Refresh Player List	Create a Player
Total number of inactive players: 4.			
FI-1290	Unconnected	<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Activate</a>	<input type="checkbox"/>
MGR-1996	Inactive	<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Activate</a>	<input type="checkbox"/>
MGR-1998	Inactive	<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Activate</a>	<input type="checkbox"/>
MGR-1998-2	Inactive	<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Activate</a>	<input type="checkbox"/>
<a href="#">Activate Selected</a>		<a href="#">Deactivate Selected</a>	<a href="#">Select all Players</a>
<a href="#">Delete Selected</a>			<a href="#">Clear Selection</a>

**Figure 14–45: MediaDirector Player List**

4. On the **Player List**, click the **Properties** link for the required Player to display the **Player Properties** page as shown in *Figure 14–46*.



**Figure 14–46: Player Properties**

You can view the following information on this page:

- **Name:** Displays the name of the selected Player.
- **Last Message:** Displays the last message received that deals with the selected Player.
- **Mode:** Displays the Player's mode: Play Only, Record Only, or Play and Record.
- **Frame Rate:** Displays the Player's programmed frame rate.
- **Control:** Displays the Player's programmed remote control mode (such as VDCP, Omnibus, BVW, Manual, etc.). Depending on the control mode selected, displays selected signal port, MediaPort under control, and advanced to cued number of frame times.
- **Timecode display:** Displays the Player's programmed timecode mode, either Drop Frame or Non Drop Frame. This value only appears for players configured for 525/60 operations.
- **Record Timecode Source:** Displays the Player's selected source from which timecode is recorded for a clip, either from External or Internal (TCG on).
- **Playback Timecode Source:** Displays the Player's selected source from which timecode is played for a clip; either From Clip or Internal (TCG on).
- **Last Frame Freeze:** Displays how long the last frame of any played clip will be frozen on-screen. 0 indicates the last frame will be frozen until the next clip.

- **EE Mode:** Displays the selected output behavior mode for a MediaPort when it enters a stopped or record state. That is, what a MediaPort should supply to its outputs when it enters a stopped or record state. The options are Normal, Never, or Record.
- **Media Wrapper Format:** Displays the selected media wrapper format for use during recording.
- **Default Clip Directory:** Displays the directory name into which clips are recorded and from which clips are played back, for the selected Player. When no entry appears, the default directory is /clip.dir.
- **Additional Player Parameters (such as Frame Still, Ignore RP-186 AFD):** You may see additional player parameters in this portion of the Player Properties page based on your settings on the Player Parameters section of the Home page. See [SystemManager Basic Configuration](#) for more information on player parameters.
- **Subtitle Handling:** Displays the selected Subtitle Handling for this player.
- **Track:** One section is provided for each attached track, either audio, video, and/or data.
  - For video, the section displays the Player's video track attributes, including attached devices, video definition, resolution, video format, VBI (Vertical Blanking Interval) data, MPEG encoding information (if applicable), IEEE 1394 channel information, and whether proxy record or audio scrub are activation. More than one video track may be attached to a Player.
  - For audio, the section displays the Player's audio track attributes, including total number of audio channels and number of channels per file, bit sample size, audio file type, audio resampling settings, and attached devices. More than one audio track may be attached to a Player.
  - For data, the section displays the Player's data track maximum bitrate.

For all track types, click the **Attached Devices** button within the track section to jump to the device's **Properties** page.

- **Output Timing:** An Output Timing button is provided for each attached video track. Click to adjust the track's output timing.
- **Deactivate:** Click to deactivate the selected Player. A warning dialog will appear. Once deactivated, the system jumps to the Player's **Edit Player** page.
- **Open:** Click to launch ClipTool for the selected Player.
- **Done:** Click to accept all changes and return to the Player List.

## Adjusting Output Timing

A Player's output timing can be adjusted in two different locations:.

- An active Player's output timing can be adjusted on the **Player Properties** page.
- An inactive Player's output timing can be adjusted on the **Edit Player** page.



**IMPORTANT:** Only qualified video technicians should use this procedure. Before commencing, ensure that you have the proper test and measurement equipment on hand, and that it is properly connected to the MediaPort.

---

### To adjust a Player's output timing:

- On the **Player Properties** page or the **Edit Player** page, click **Output Timing** to display the **Adjust Output Timing** page as shown in *Figure 14–47*.



**Figure 14–47: Adjust Output Timing**



**NOTE:** Whether the display for Output timing shows **HD Output Timing** or **SD Output Timing**, or both, will vary depending on the attached device and video standard configured.

- Depending on the desired output, in the **HD Output Timing for...** and/or **SD Output Timing for...** field(s), enter the desired output timing, or click the desired timing buttons to increment or decrement the output timing — by lines, half-lines, pixels and half pixels.



**NOTE:** If you manually type an output timing value in the field, you must press Enter for the new value to register.

- When the adjustments are complete, click **Done** to return to the original page (**Player Properties** page or **Edit Player** page). Click **Cancel** to return to the original page without making (or accepting) any changes — the original timing value will be restored.

## Creating Multiple Audio Track Players

This advanced feature allows you to configure a single Player with multiple audio tracks. In this configuration, each audio track is associated with its own individual MediaPort. For example, you wish to create a Player that has a single DV video channel, and 12 audio channels. This configuration cannot be accomplished using a single MediaPort. Instead, the Player must be connected to two MediaPorts.



**NOTE:** Since release 4.7 SR3, support is now provided for up to 96 audio tracks, 48 embedded pairs per video clip. Up to 48 audio tracks can now be played simultaneously.

**To configure a single Player with multiple audio tracks and associate the Player with multiple MediaPorts:**

1. Ensure that all MediaPorts that you wish to connect to the new Player are all connected to the same IEEE 1394 bus on the MediaDirector. This can be verified on the SystemManager's **System** diagram.
2. Ensure that the input video signal is distributed to the SDI input connectors on all MediaPorts that you wish to use. This step is necessary in order to synchronize all audio tracks to the same video.
3. Create a Player. Follow steps 1 through 8 in *Creating a Player*.
4. In place of steps 9 and 10 in *Creating a Player*, continue with step 5 below.
5. Click the button for the desired video track media type. Optionally, you may choose to add VBI.
6. For the selected video track, click **Attach Devices** to display the **Attach Devices** page.
7. In the **Attach the Device** column, click the check box for the first MediaPort that you wish to connect to the Player. This step connects video to the Player.
8. Click **Done** to return to the **Edit Player** page.
9. Click **Audio** as many times as necessary, until the desired number of channels are achieved — also taking into account the number of MediaPorts available. For example: If you want to use 14 channels, click Audio twice. Select 8 channels in the first track, and 6 channels in the second track.

Refer to *Adding Audio Tracks* for details on audio channel selection.

10. Click **Attach Devices** for each audio track, and attach the track to one of the selected MediaPorts. Ensure that each track is connected to a unique MediaPort. Click **Done** within the **Attach Devices** page for each track.
11. On the **Edit Player** page, click **Done** to complete the procedure and return to the **Player List**. The Player may now be activated and used in the normal manner.

Refer to *Activating and Deactivating Players* for instructions.

*Figure 14–48* illustrates a multi-track Player with 14 audio channels.

<b>Track 2: Audio</b>	Devices: <a href="#">MDM-5001_01149</a>	<input type="button" value="Attach devices"/>
	Total <input type="text" value="8"/> audio channels	
	Sample size: <input type="text" value="24 bit"/>	Audio File Type: <input type="text" value="aiff"/>
	Number of language tag rules: <input type="text" value="0"/> (0 disables tag-based routing)	
	<input type="button" value="Remove"/>	
<b>Track 3: Audio</b>	Devices: <a href="#">MDM-5001_01149</a>	<input type="button" value="Attach devices"/>
	Total <input type="text" value="6"/> audio channels	
	Sample size: <input type="text" value="24 bit"/>	Audio File Type: <input type="text" value="aiff"/>
	Number of language tag rules: <input type="text" value="0"/> (0 disables tag-based routing)	
	<input type="button" value="Remove"/>	

**Figure 14–48: Multiple Audio Track Players Configuration Example**

## Moving Players

This feature allows users to move one or more Players from one MediaDirector to another.

Additionally, Players may be moved from MediaDirectors that are not responding. This feature is useful when MediaPorts are “moved” between MediaDirectors (thus requiring you to move the MediaPorts’ associated Players), and when MediaDirectors need to be serviced.



**NOTE:** In this context, “moved” means physically removing a MediaPort from the source MediaDirector’s 1394 bus by disconnecting its IEEE 1394 cable, and reconnecting the MediaPort to the destination MediaDirector and reconnecting its IEEE1394 cable.

### To move Players:

1. Navigate to the **Player List** for the destination MediaDirector. At the bottom of the page, select the source MediaDirector from the drop-down box (*Figure 14-49*).

#### Move Players from another MediaDirector

To move Players from another MediaDirector onto AI\_D7-C01H0, select the source MediaDirector below, then click **Select Players** to display the player selection screen.

AI_D4-01043	Select Players
-------------	----------------

**Figure 14-49: Player List—Move Players from another MediaDirector Section**

2. Click **Select Players** to display the **Player Selection** page as shown in *Figure 14-50*.

The screenshot shows a table of player information. The columns are: Name, Status, and Actions (Edit, Delete, Activate). There are four rows, each with a checkbox to the right. Below the table are buttons for 'Activate Selected', 'Deactivate Selected', 'Select all Players', and 'Clear Selection'.

Name	Status	Actions
FI-1290	Unconnected	Edit Delete Activate
MGR-1996	Inactive	Edit Delete Activate
MGR-1998	Inactive	Edit Delete Activate
MGR-1998-2	Inactive	Edit Delete Activate

Total number of active players: 0. Total number of inactive players: 4.

Refresh Player List | Create a Player

Activate Selected | Deactivate Selected | Select all Players | Clear Selection

Delete Selected

To view the details of a player, click on the icon to the left of the player name.

#### Move Players from another MediaDirector

To move Players from another MediaDirector onto D7-01027H0, select the source MediaDirector below, then click **Select Players** to display the player selection screen.

D7-C11FS	Select Players
----------	----------------

**Figure 14-50: Moving Players**

3. Choose the Players that you wish to move between MediaDirectors by clicking the appropriate check boxes. You can also click **Select all Players** or **Clear Selection** as desired.
4. Click **Move** to perform the move function between MediaDirectors. The selected Players will disappear from the list.
5. Click **Done** to complete.

## Viewing Player Settings and Attached Devices

On the **Attached Devices** page you can view the current attachments and settings for a Player in Read-Only mode. The settings displayed on this page vary with track type.

### To view a Player's attached devices:

- From the **Player Properties** page, click the **Attached Devices** button associated with a track to access the **Attached Devices** page.
- In *Figure 14–51*, a “Video” track hyperlink (adjacent to the “**Player Track List**” label) has been selected.

Devices attached to Track 1 (MPEG) on Player p7301B.

Attachments and properties cannot be modified - Player is **Active**.

**Player Track List:** Track 1 (MPEG) [Track 2 \(Audio\)](#)

Device	Type	Status	Players (tracks) Attached	Attach	Channel	Primary Output Video Format	Secondary Output Video Format	Video Definition Converter	Recording Device	Time Code Format
<a href="#">MIP- 7301_01997</a>	SD/HD-DV/MPEG2/VC3+PROXY	Connected	<a href="#">**_p7301B (track:1)</a> <a href="#">**_p7301B (track:2)</a> <a href="#">**_p7301A</a>	<input checked="" type="checkbox"/>	B	525 as 4x3 aspect  VANC line placement	525 as 4x3 aspect  Ext Converter OFF ▾ VANC line placement	Up Internal, Pillar  Down Internal, Letter		<a href="#">Input Output</a>  VITC LTC & VITC Lines: 14 16 Lines: 14 16
						SMPTE-334-2 (CC) Auto SMPTE-2016-3 (AFD) Auto	SMPTE-334-2 (CC) Auto SMPTE-2016-3 (AFD) Auto	4:3 AFD 0000 Not Specified  16:9 AFD 0000 Not Specified		
						Specify not usable VANC line	Specify not usable VANC line			

( \*\* Indicates active player. )

**Figure 14–51: Attached Devices—Video Selection Example**

You can view the following parameters:

- Player Track List:** This list shows the other tracks configured on this current Player, and their associated media types. Click the desired hyperlink to attach devices to that specific track. The table updates accordingly.
- Device Column:** This column lists all devices attached to the Player’s MediaDirector. Each entry is a hyperlink that takes you to the device’s **Properties** page.
- Type Column:** This column describes the type of device, such as a DV/MPEG MediaPort, an SDI/SDTI MediaPort or a Third-party Device.
- Status Column:** This column lists the status of the device.
- Players (tracks) attached:** This column lists the names of all Players currently attached to the device. The column also lists all the *tracks* on the current Player that are attached to the device. Click the Player hyperlink to access that specific Player’s **Edit Player** page. Click the **Track** hyperlink to access a specific track’s **Attach Devices** page.

Note that multiple Players can be attached to a device. In addition, multiple tracks can be shown. If a Player is shown without a track, it is not the current Player that you are modifying.

- **Attach:** This column displays a “Connect” check box when the adjacent device is compatible with the current track. Check the box to associate the track to the device. Clear the box to break the association. If a check box does *not* appear, the device is not compatible with the track’s media type – for example, a 10Bit SDI track cannot be connected to a DV/MPEG MediaPort.
- **Connection Port:** This column displays the available ports for attaching MPEG tracks. Click the drop-down arrow to select a different port. This column only appears for devices with multiple ports.
- **Program Number:** This field only appears for audio or video tracks attached to a MediaPort 4010 when demux capabilities are required. This field specifies the number for the program which should be extracted from the transport stream and demuxed. Enter a string of up to four characters in length, where each character is a hex digit (0-9, a-f, or A-F).



**NOTE:** Entering 0000 in the Program Number field specifies the automatic selection of the first program found in the transport stream.

- **Primary Output Video Format:** This column displays the selected output format for video content being up or down converted. This may include VANC line placement.
- **Secondary Output Format:** This column displays the selected output format for video content being up or down converted. This may include External Converter settings and VANC line placement.
- **Video Definition Converter:** (for the MediaPort 5400, 5500, and 7000 series) This column displays aspect ratio adjustment options when video is up converted or down converted.
  - **Up:** This field displays the selected option when frames are being up converted from SD to HD using internal or external up converters. This column only appears for MediaPort 4100 and 5500 series. Click the drop-down arrow to select from the following options:
    - **None:** Specifies that no up conversion adjustment should take place.
    - **Internal, Pillar:** Specifies that black bars should be inserted on the sides of frames as necessary to fill the screen.
    - **Internal, Crop:** Specifies that the top and bottom of frames should be cropped and black bars should be inserted on the sides as necessary to fill the screen. When a frame is too large horizontally, the sides of the frame should be cropped and black bars inserted on the top and bottom to fill the screen.
    - **Internal, Full:** Specifies that black bars should be inserted above and below the frame to maintain the aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
    - **Internal, Anamorphic:** Specifies that frames should be stretched horizontally and vertically to fill an entire 16:9 aspect ratio HD screen.
    - **External, No Delay:** (for MediaPort 4100 series only) Specifies that no adjustment should be made to compensate for delay through an external SD up converter.
    - **External, Delay 1 Frame:** (for MediaPort 4100 series only) Specifies that a 1 frame delay should be added to compensate for delay through an external SD up converter.
    - **External, Delay 2 Frames:** (for MediaPort 4100 series only) Specifies that a 2 frame delay should be added to compensate for delay through an external SD up converter.

- External, Delay 3 Frames:** (for MediaPort 4100 series only) Specifies that a 3 frame delay should be added to compensate for delay through an external SD up converter.
- External, Delay 4 Frames:** (for MediaPort 4100 series only) Specifies that a 4 frame delay should be added to compensate for delay through an external SD up converter.

Refer to [About Up Conversion or Down Conversion Options](#) for visual examples of some of the above up-conversion options.

- Down:** This field displays aspect ratio adjustment options when frames are being down converted from HD to SD using internal or external down converters. This column only appears for HD capable devices with multiple ports, which includes the MediaPort 4100 and 5500 series. Click the drop-down arrow to select from the following options:
  - None:** Specifies that no down conversion aspect ratio adjustment should take place.
  - Internal, Crop:** Specifies that the top and bottom of the frame should be cropped and black bars should be inserted on the sides as necessary to fill the screen. When a frame is too large horizontally, the sides of the frame are cropped and black bars are inserted on the top and bottom to fill the screen.
  - Internal, Letter:** Specifies that when a frame fails to fill a screen vertically, black bars should be inserted above and below the frame to maintain the original aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
  - Internal, Full:** Specifies that black bars should be inserted above and below the frame to maintain the aspect ratio of the original source (usually a picture of 16:9 aspect ratio or wider).
  - Internal, Anamorphic:** Specifies that frames should be compressed horizontally and vertically to fit into a 4:3 aspect ratio SD screen.
  - External, No Delay:** Specifies that no adjustment should be made to compensate for delay through an external HD down-converter.
  - External, Delay 1 Frame:** (for MediaPort 4100 series only) Specifies that a 1 frame delay should be added to compensate for delay through an external HD down-converter.
  - External, Delay 2 Frames:** (for MediaPort 4100 series only) Specifies that a 2 frame delay should be added to compensate for delay through an external HD down-converter.

Refer to [About Up Conversion or Down Conversion Options](#) for visual examples of some of the above down-conversion options.

- **SDI Audio Embedding Column:** When an audio track is selected from the “Player Track List” hyperlinks at the top, this column allows you to select the device’s SDI audio embedding mode. Note that this column only appears for AES/EBU tracks, or for all DV tracks without an accompanying AES/EBU track.

No label appears unless the box in the **Attach Device** column is checked.

The label “**None**” appears (without a drop-down box) when the device does not support SDI embedding.

A drop-down box appears when the device supports SDI embedding. There are three choices that determine how audio data is embedded in the SDI input and output signals — to and from the MediaPort:

- None** — Audio information is transmitted and received on the MediaPort’s AES/EBU connectors only.

For recording, audio is not de-embedded from the SDI input signal. Instead it is recorded from the AES/EBU connectors.

For playback, audio is not embedded in the SDI output signal. Instead it is played out from the AES/EBU connectors.

For MediaPort 3003, only the first six channels on the three AES outputs are available.

For MediaPort 3006, only the first eight channels on the four AES outputs are available.

- ❑ **Embedded** — The MediaPort uses audio data that is embedded in the SDI signal for recording and playback.

For recording, audio is de-embedded from the SDI input signal. Any signal on the AES/EBU connectors are ignored.

For playback, all eight audio channels (at full 24-bit resolution) are embedded in the SDI output signal. The AES/EBU connectors are muted.

Depending on Player type and associated attached device, up to 16 channels can be embedded.

- ❑ **Limited** — The following actions occur:

For recording, all audio data is de-embedded from the SDI input signal. Any signal on the AES/EBU connectors is ignored.

For playback, the MediaPort only embeds two pairs of audio channels (at 20-bit resolution) into the SDI output signal. The AES/EBU connectors are muted.

Refer to “About SDI Embedded Audio” in the *Spectrum System Hardware Orientation Guide* for more information.

- **Recording Device:** This column selects the *one device* (MediaPort or Third-party Device only) that is used as the source of media during recording. For example, when a Player is connected to multiple devices, only one of them can be the recorder. The column only appears when a Player is record capable, and the radio button only appears when the box in the Attach Device Column is checked.
- **Time code format:** The drop-down timecode format boxes appear only when a video track is selected. Note the following:
  - ❑ The timecode format function applies to MediaPorts only. It does not apply to Players assigned to third-party devices.
  - ❑ When the Player’s **Record Timecode Source** is “External,” input and output timecode format selections can be made independently.
  - ❑ When the Player’s **Record Timecode Source** is “Internal TCG on),” only output timecode format selections can be made.
  - ❑ When the Player’s mode is “Record Only,” the **Input** drop-down box is available. When the mode is “Play Only,” the **Output** drop-down box is available. When the mode is “Play and Record,” both the **Input** and **Output** boxes are available.
  - ❑ The Input selection is available for record capable Players when that Player has an External timecode source selected – this popup selects the type of timecode that is recorded by the MediaPort from an external source (for example, VITC from a VTR, or LTC from the VTR’s LTC audio outputs).

Select **Only LTC** to record LTC input from the MediaPort’s LTC input connector. VITC (if present on the SDI input connector) is ignored and not recorded.

Select **Only VITC** to read VITC from the MediaPort's SDI input connector, extracting the vertical interval timecode value from the specified line(s). LTC (if present on the LTC input of the MediaPort's LTC connector) is ignored and not recorded.

Select **Reference VITC** if you want the timecode to be derived from the reference input VITC.

The selected timecode source causes that timecode information to be saved as separate metadata along with the media information.

- The Output selection allows you to select the type of timecode that is output from the MediaPort to external devices.

Select **Only LTC** to output LTC to the MediaPort's LTC output connector. VITC is not generated or inserted on the SDI output.

Select **VITC & LTC** to insert VITC on the specified line(s) of the digital video coming out of the MediaPort's SDI output connector. LTC output is always generated even in this mode.



**NOTE:** For the MediaPort 5320 and 5220 series, the output timecode options that you select on the **Attach Devices** page apply to the channel that you have selected in the **Assignable LTC Output** field of the **MediaPort Properties** page for the attached MediaPort. Refer to [Viewing MediaPort Properties](#), for a description of the **Assignable LTC Output** field.

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- **Done:** Click to return to the [Edit Player](#) page.

Refer to [About VANC Implementation in Spectrum](#) for additional information about configuring and using the timecode features of the Harmonic system.

Refer to [Attaching Devices and Setting Conversion Options](#) for information about attaching devices to tracks and for descriptions of the available settings for this procedure.

## Allowing Players to be Enabled or Disabled by Automation

SystemManager allows players on your Spectrum system to be enabled or disabled using an automation system. If you wish to configure your system for automation control of players, contact your automation vendor to find out if they have implemented this capability.



**CAUTION:** In order to allow automation control of players, the player resource safety check in SystemManager must be disabled (see [Configuring the Player Resource Check](#)). When the player resource check is disabled, SystemManager no longer resolves conflicts between players competing for 1394 bus bandwidth and MediaPort resources automatically. Instead, you must verify on your own that conflicting players are not activated simultaneously.

---

## About the Player Utility

Keep the following important points in mind:

- The minimum safe zone between the "Record" Player and a "Playout" Player viewing the clip being recorded for MediaDirectors is as follows:
  - The minimum safe zone for Players on the same host of the same MediaDirector is 10 seconds. If the "Record" Player is on a different MediaDirector or a different host of the same MediaDirector than the "playout" Player, the minimum safe zone in all cases is 40 seconds.

- In order to prevent queuing or playing a clip in a Playout Player in violation of the minimum safe zone, the software notifies the playout control application that the clip is unavailable until it is greater than 10 seconds or 40 seconds in duration (or recording is finished) if the players are on the same host or on different hosts, respectively. The actual time from crash record to availability of playout may be several seconds longer, owing to record startup and automation polling latencies. For VDCP controllers, the NOT READY TO PLAY BIT in the VDCP ID Request command is used. For Omnibus controllers, QServ gets this status from the MediaDirector and reports that such a clip is not loadable, and further reports an error if a load is attempted.

## About VANC Implementation in Spectrum



**NOTE:** This section deals with VANC for HD video. If you wish to preserve VANC data for SD video, please contact Technical Support for assistance.

In a Spectrum System, Vertical Ancillary Data (VANC) is, by default, ignored during the recording of HD material. Using the SystemManager application, you can preserve information in the stored clip by specifying a non-zero value, up to a maximum of 6000 bytes on the **Edit Player** page as shown in *Figure 14–52*.

The screenshot shows the 'Edit Player' interface for a track named 'Track 1: MPEG-2'. At the top, it displays 'Devices: MIP-5301\_01189 (Port: A, VITC input (14, 16), VITC output (14, 16))' and an 'Attach devices' button. Below this is a table with columns for 'Play/Record Mode', 'Video Definition', 'Resolution', and 'Frame Geometry'. Under 'Play/Record Mode', 'Record' is selected. Under 'Video Definition', 'High' is selected. Under 'Resolution', 'Full Resolution (Main Video)' is selected. Under 'Frame Geometry', '1280x720p' is selected. Further down, there are fields for 'Configuration' (set to 'Simple'), 'Record Format' (set to 'Long GOP'), 'Enable Open GOP' (unchecked), 'Bitrate' (set to '30.0 Mbps'), 'Chroma' (set to '4:2:0'), 'VANC type' (set to 'Internal'), 'Number of VANC data (50 - 3000)' (set to '1000 Bytes per frame'), and 'MPEG-1 Proxy Record' (unchecked). At the bottom right are 'Output Timing' and 'Remove' buttons.

**Figure 14–52: Edit Player—VANC Implementation**

The number of bytes specified per frame is saved with the recording. If the clip is later played on a Spectrum System, it is reconstructed as VANC in the HD baseband output. Bytes in excess of the specified value will not be recorded.

Preserving VANC data in a recording consumes bandwidth. Bandwidth requirements for VANC-328M, which applies if you select **Internal** as your VANC type for an MPEG-2 track, are listed in *Table 14–4*.

**Table 14–4: Bandwidth Requirements for VANC-328M Data**

Bandwidth Required for VANC-328M (Mbps)				
VANC Bytes Preserved per Frame	Frame Rate (fps)			
	25	29.97	50	59.94
1000	0.2	0.2	0.4	0.5

Bandwidth Required for VANC-328M (Mbps)				
2000	0.4	0.5	0.8	1.0
3000	0.6	0.7	1.2	1.4
4000	0.8	1.0	1.6	1.9
5000	1.0	1.2	2.0	2.4
6000	1.2	1.4	2.4	2.9

a Spectrum System automatically decreases the video recording bit rate by the amount shown so that the total bit rate (VANC plus video) does not exceed the value configured into the Player. You should take this information into account when setting the bit rate in order to achieve the desired video quality. No adjustment is needed for playback-only Players because the clip will conform to the settings used for recording, that is, a Player set for "X" Mbps playback will accommodate any VANC as long as the Player used to record the clip used the same bit rate or less.

### Equation for VANC-328M

The following equation can be used to determine the number of bytes required to store VANC data for SMPTE-328M encoding.

Key:

**N** = number of VANC packets

**DC<sub>n</sub>** = data count for VANC packet n (this data count is the number of user data words in the VANC packet)

$$\sum_{n=0}^{N-1} \left( 5 + 8 \left\lceil \frac{1 + 23 \left\lceil \frac{8(7 + DC_n)}{22} \right\rceil}{8} \right\rceil \right)$$

### Equation for VANC-436M

The following equation can be used to determine the number of bytes required to store VANC data for SMPTE-436M encoding:

Key:

**N** = number of VANC packets

**DC<sub>n</sub>** = data count for VANC packet n (this data count is the number of user data words in the VANC packet)

$$2 + \sum_{n=0}^{N-1} 4 \left\lceil \frac{17 + DC_n}{4} \right\rceil$$

### About VANC for AVC-Intra

- The AVC-Intra format reserves a fixed amount of space for VANC data regardless of whether or not VANC is present. Therefore, the space used for AVC-Intra clips is independent of how much VANC is captured.
- For 1080i resolution, 5760 bytes are reserved for VANC. For 720p resolution, 2880 bytes are reserved for VANC.
- Each VANC packet has **DC** (data count) bytes of payload. Storing a VANC packet in AVC-Intra uses **DC + 7** bytes of the reserved space.

### About Closed Caption Conversion

When using the MediaPort 4100 series to up-convert SD video to HD, closed-caption data is encapsulated as “native” EIA-708 and supplied as VANC in the HD output.

## About AFD Support

The Active Format Description or AFD is a standard set of codes that can be inserted in the baseband SDI video signal which carries information about their aspect ratio and active picture characteristics. Standard AFD codes provide information to video devices about where in the coded picture the active video is and also the “protected area” which is the area that needs to be shown. Outside of the protected area, edges at the sides or the top can be removed without the viewer missing anything significant. Video decoders and display devices can then use this information, together with knowledge of the display shape and user preferences, to choose a presentation mode. The AFD codes are described by SMPTE-2016-1 and RP-186-1995 for HD and SD video respectively.

Spectrum supports AFD for both HD and SD video on the MediaPort 4100, 5220, 5320, 5400, 5500, and 7000 series.

If the MediaPort you are using supports AFD and you are playing content that contains AFD information, the AFD value in that content will override your player configuration settings in SystemManager. However, even if you are playing content that contains AFD information, make sure to configure the up/down conversion options for your player in SystemManager. This is necessary for the internal converter to be activated. If no AFD information is found in your video content, then the aspect ratio settings selected in SystemManager will be used by default.



**NOTE:** If you are recording HD video that contains AFD information in the VANC data, make sure to preserve a sufficient amount of VANC data in the stored clip by specifying the appropriate value (up to a maximum of 6000 bytes) on the **Edit Player** page. If you do not set a high enough value, you may lose AFD information. Refer to [About VANC Implementation in Spectrum](#) for more information about preserving VANC data.

When playing a clip with AFD values, a Spectrum system looks for the AFD information in the order described in [Table 14-5](#), and then plays out the first AFD value that it finds. This priority is applied when the clip is loaded in order to determine the aspect ratio of the internal up or down converter.

**Table 14–5: AFD Priority Table**

Priority	Description
1st	Harmonic aspect ratio flag
2nd	Encoda aspect ratio flag
3rd	MXF AFD picture essence descriptor value
4th	AFD information in 436M track



**NOTE:** You can use the Media API to obtain or change the AFD value in a clip.

*Table 14–6* summarizes all of the Encoda to Harmonic aspect ratio mappings. Note that “Ana” refers to “Anamorphic.”

**Table 14–6: Encoda AFD to Harmonic Aspect Ratio Table**

TV Width Code (Encoda)	Harmonic Aspect Ratio
(blank)	Player or Clip Tag Default
W	Wide (16:9); Up = Ana, Down = Letter
16	16:9; Up = Ana, Down = Letter
14	14:9; Up = Crop, Down = Crop
4	4:3; Up = Pillar, Down = Full
1	AFD = 1, 4:3; Up = Pillar, Down = Full
2	AFD = 2, 16:9; Up = Full, Down = Letter
3	AFD = 3, 14:9; Up = Crop, Down = Crop
5	AFD = 5, 4:3/14:9; Up = Crop, Down = Crop
6	AFD = 6, 16:9/14:9; Up = Crop, Down = Crop
7	AFD = 7, 4:3; Up = Pillar, Down = Full

*Table 14–7* shows the mapping between Harmonic Aspect Ratio Conversion values and SMPTE 2016 AFD codes.

**Table 14–7: Harmonic Aspect Ratio to SMPTE 2016 and RP186 AFD codes**

Harmonic Aspect Ratio	AFD Codes for Standard Definition
Anamorphic	1000/1
Crop	1011/0
Full	1010/0
Pillar	1001/0
None	Invalid

Harmonic Aspect Ratio	AFD Codes for Standard Definition
Anamorphic	1000/1
Harmonic Aspect Ratio	AFD Codes for High Definition
Anamorphic	1000/1
Crop	1011/1
Full	1001/1
Letter	1010/1
None	Invalid

For diagrams of the Harmonic up conversion and down conversion aspect ratio options refer to [Figure 14-39](#) and [Figure 14-40](#).

## About Harmonic Timecode Behavior

Harmonic has extensive timecode management capabilities for selecting sources, encoding lines, and generating/regenerating timecode at record, and playback time. Timecode sources may come from the Player's LTC input connection, be extracted from the vertical interval (VI) of the Player's source video, or may be automatically generated internally from the system's MediaDirector reference input (as selected on the **MediaDirector Properties** page in the **General Properties** sections).

Irrespective of Player type - whether Record or Play, a timecode source must be chosen for each Player.

### For Record Players:

On the **Edit Player** page, the **Record Timecode Source** selection determines if the timecode will be generated internally, or externally.

- If **External** is selected, the source can be either **LTC** or **VITC** (as selected on the **Attach Devices** page).
- If **Internal (TCG on)** is selected, timecode is obtained from the server's Timecode Generator.

Regardless of the "Input" timecode source, the record input timecode data will be saved as part of the video media file. If the Player is configured to preserve "**VBI data**" (as selected in the **Track Section** of the **Edit Player** page), up to 8 selected lines of information are also recorded with the media file. This option is available for DV 25, DVCPRO 25, DVCPRO 50, and MPEG tracks only.

### For "Play" Players:

On the **Edit Player** page, the **Playback Timecode Source** selection determines if the timecode will be generated internally (regardless of recorded data) for each clip – or from the recorded media.

- **From Clip:** Allows you to output the timecode stored inside the clip itself. The timecode is read frame-by-frame from the clip and output using the MediaPort.
- **Internal (TCG on):** Allows you to output timecode from the server's Timecode Generator.

When **Internal (TCG on)** is selected for either Record or "Play" Players, an additional set of options are available to configure timecode generation. The choices are:

- **Hold:** Allows you to maintain timecode generation at a constant value specified using the Player API.
- **Free Run:** Allows you to define a continuous increase in value starting from a value specified using the Player API.
- **Locked to Player Timeline:** Timecode is generated based on the timeline position. Typically, timecode will start from 00:00:00:00 and will be continuous thorough the entire back-to-back clip sequence.
- **Locked to Clip's First Timecode:** Timecode is generated by the internal Timecode Generator (TCG) but the TCG is re-initialized at the beginning of each clip with the clip's start timecode value, offset by the difference between the "clip in" value used when attaching the clip (OmPlrAttach) and the first frame value of the clip (OmPlrClipGetInfo). When the timeline position reaches the next clip, the TCG again re-initializes to a value based on the clip's start timecode and how the clip was attached.



**NOTE:** This option is undefined for a Record Player; selecting this option inserts valid but indeterminate timecode.

- **Locked to Clip Position:** Timecode is generated by the internal timecode generator (TCG) but the TCG is re-initialized to a value based on how the clip was attached (OmPlrAttach). When the timeline position reaches the next clip, the TCG again re-initializes to a value based on how the clip was attached.
- **Locked to VITC input reference:** Timecode is derived from the Vertical Interval Timecode (VITC) in the reference input.

#### Comparing "From Clip" with "Locked to Player Timeline"

When a clip is recorded with timecode, the timecode values are stored in the wrapper file and media essence file. The wrapper file only holds the start timecode while the media essence file holds all timecode values, frame-by-frame.

The timecode output from a MediaPort can be produced from the media essence file or generated by the MediaDirector's internal Timecode Generator (TCG).

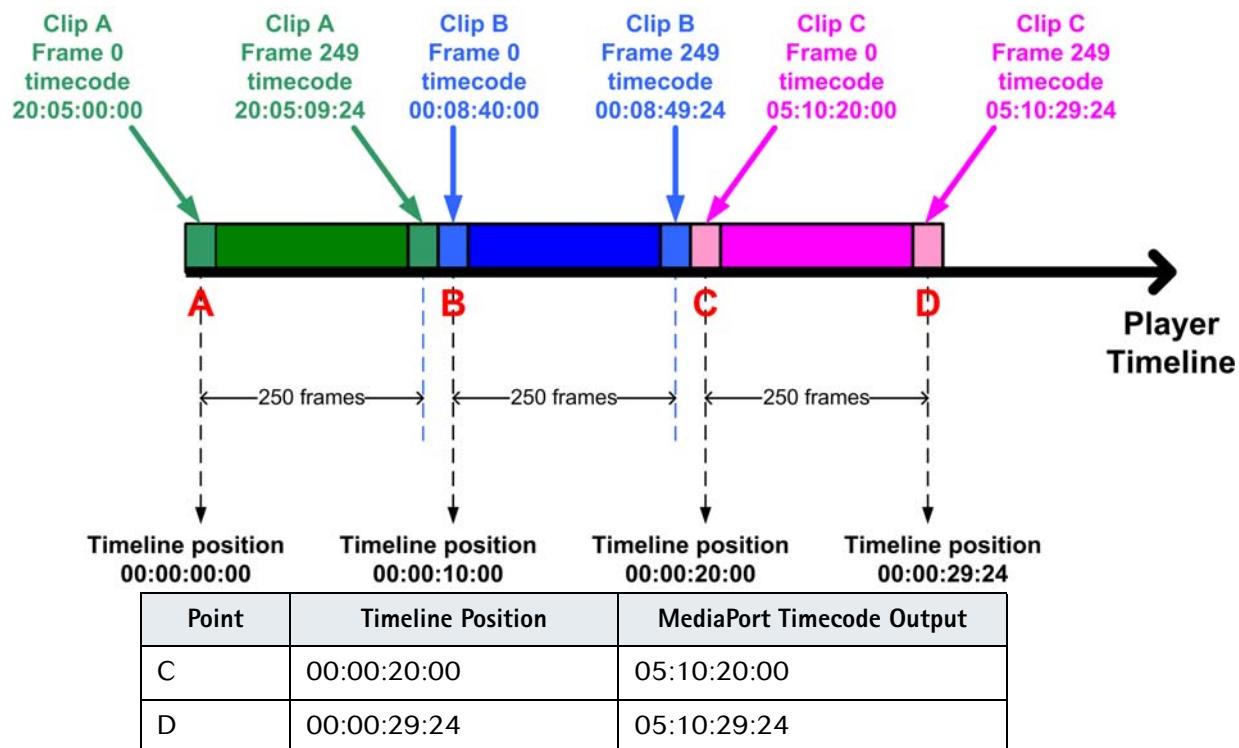
*Figure 14–53* illustrates a scenario where there are three PAL (625) clips A, B and C, each recorded for 10 seconds (250 frames), and all loaded on to the timeline.

**Figure 14–53: Comparing Multiple Clip Timecodes on a Timeline**

To output the actual timecode stored inside the media essence file, the Player's **Playback Timecode Source** must be set to "**From Clip**". The timecode is read frame-by-frame from the media essence file and output using the MediaPort. In a back-to-back playback, the timecode output will change when a different clip starts to play. Referencing *Figure 14–53*, the From Clip timecode value at points A, B, C, & D are listed in *Table 14–8*.

**Table 14–8: From Clip Timecode Values**

Point	Timeline Position	MediaPort Timecode Output
A	00:00:00:00	20:05:00:00
B	00:00:10:00	00:08:40:00



If the Player's **Playback Timecode Source** is set to "Internal (TCG on)" and **Timecode Generator Mode** is set to "**Locked To Player Timeline**" then the timecode output is generated based on the timeline position. The actual timecode stored inside the media essence file is no longer being used. Typically the timecode output will start from 00:00:00:00 and will be continuous throughout the entire back-to-back. Referencing [Figure 14-53](#), the Locked to Player timecode values at points A, B, C, & D are listed in [Table 14-9](#).

**Table 14-9: Locked to Player Timeline Timecode Values**

Point	Timeline Position	MediaPort Timecode Output
A	00:00:00:00	00:00:00:00
B	00:00:10:00	00:00:10:00
C	00:00:20:00	00:00:20:00
D	00:00:29:24	00:00:29:24

#### About "Locked to Clip's First Timecode"

If the Player's **Playback Timecode Source** is set to "Internal (TCG on)" and **Timecode Generator Mode** is set to "**Locked to Clip's First Timecode**" then the internal timecode generator is reinitialized at the beginning of each clip with the start timecode from that clip.

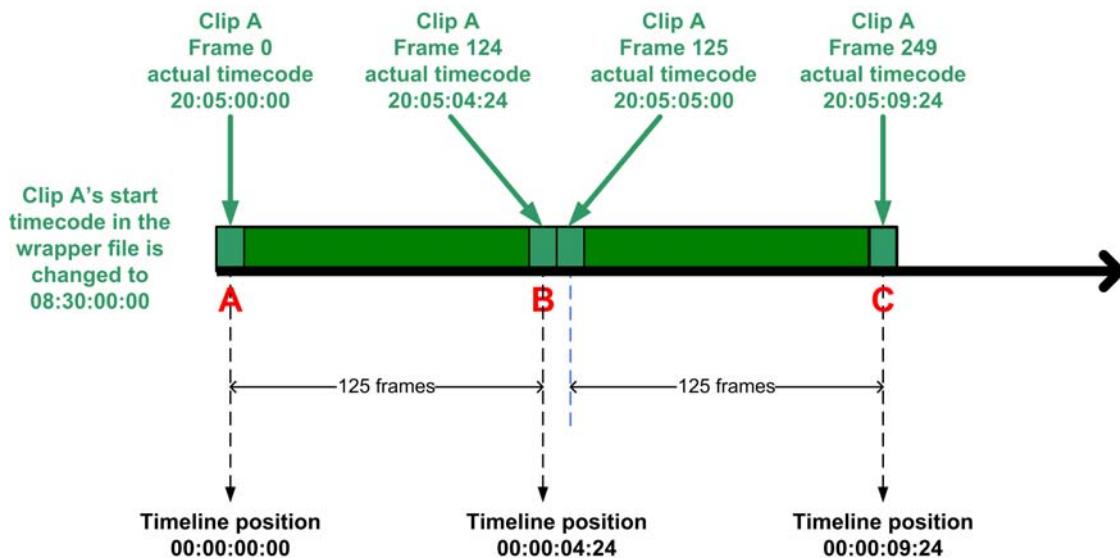
The timecode value is not read frame-by-frame from each clip. The start timecode is read from the wrapper file and used to extrapolate the remaining timecode for the particular clip. As the playback of one clip reaches the end and a new clip begins to play, the Timecode Generator repeats the action by reading the start timecode of the new clip and extrapolates the remaining timecode for that new clip.

Referencing [Figure 14–53](#), the Locked to Clip's First Timecode values at points A, B, C, & D are listed in [Table 14–10](#).

**Table 14–10: Locked to Clip's First Time Code Values**

Point	Timeline Position	MediaPort Timecode Output
A	00:00:00:00	20:05:00:00
B	00:00:10:00	00:08:40:00
C	00:00:20:00	05:10:20:00
D	00:00:29:24	05:10:29:24

If the timecode stored inside the media essence file has discontinuity, that discontinuity will not affect the MediaPort's timecode output because the timecode output is extrapolated from the wrapper file's start timecode instead of reading frame-by-frame from the media essence file. This is the main difference between “From Clip” and “Locked To Clip's First Timecode”.



**Figure 14–54: Locked to Clip's First Time Code Timeline**

Harmonic API commands can be used to modify the wrapper file start timecode without affecting the actual timecode stored inside the media essence file.

For example, clip A's wrapper file start timecode was changed from the original value of 20:05:00:00 to a new value of 08:30:00:00. Referencing [Figure 14–54](#), if **Timecode Generator Mode** is set to “Locked to Clip's First Timecode” and clip A was loaded and playback, then the timecode output is listed in [Table 14–11](#).

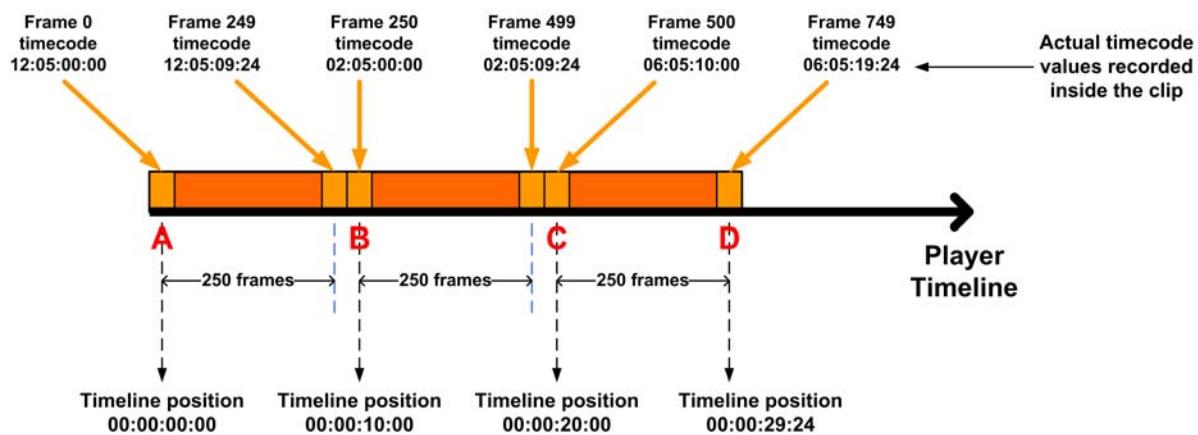
**Table 14–11: Modifying Timecode using Harmonic API Commands**

Point	Timeline Position	MediaPort Timecode Output	Actual Timecode in Media Essence File
A	00:00:00:00	08:30:00:00	20:05:00:00

Point	Timeline Position	MediaPort Timecode Output	Actual Timecode in Media Essence File
B	00:00:04:24	08:30:04:24	20:05:04:24
C	00:00:09:24	08:30:09:24	20:05:09:24

### Comparing "Locked to Clip's First Timecode" and "From Clip"

*Figure 14–55* shows a single PAL (625) clip that has been recorded for 30 seconds (750 frames) and with discontinuous timecode.



*Figure 14–55: Locked to Clip's First Timecode Timeline*

When the **Timecode Generator Mode** is set to “Locked to Clip’s First Timecode”:

The internal Timecode Generator only reads the start timecode from the wrapper file and extrapolates the remaining timecode for the same clip. Referencing *Figure 14–55*, the timecode value at points A, B, C, & D are listed in *Table 14–12*.

*Table 14–12: Locked to Clip's First Timecode Values*

Point	Timeline Position	MediaPort Timecode Output
A	00:00:00:00	12:05:00:00
B	00:00:10:00	12:05:10:00
C	00:00:20:00	12:05:20:00
D	00:00:29:24	12:05:29:24

When the **Playback Timecode Source** is set to “From Clip”:

- The timecode is read frame-by-frame from the media essence file and output using the MediaPort. Referencing *Figure 14–55*, the timecode value at points A, B, C, & D are continuous as listed in *Table 14–13*.

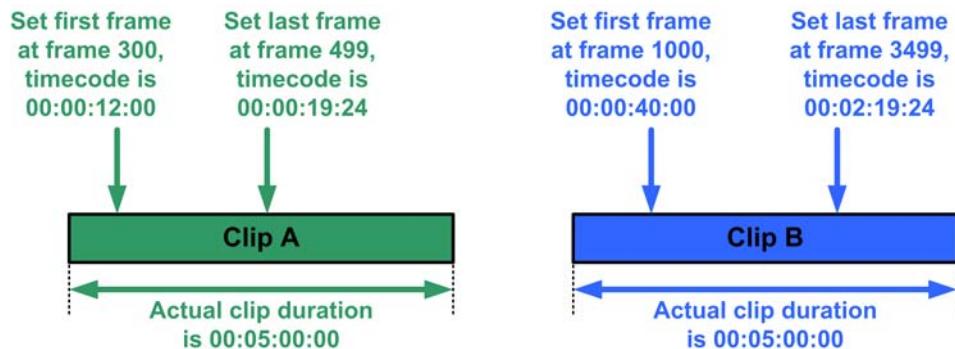
**Table 14–13: From Clip Timeline**

Point	Timeline Position	MediaPort Timecode Output
A	00:00:00:00	12:05:00:00
B	00:00:10:00	02:05:00:00
C	00:00:20:00	06:05:10:00
D	00:00:29:24	06:05:19:24

**About "Locked to Clip Position"**

If the **Player's Timecode Generator Mode** is set to "Locked to Clip Position" then the internal Timecode Generator is reinitialized at the beginning of each clip, with the IN point of each clip.

For example, if there are two PAL (625) clips A and B, and each clip has a duration of 5 minutes (7500 frames), each clip is trimmed down as shown in [Figure 14–56](#).

**Figure 14–56: Locked to Clip Position Timeline**

In [Figure 14–57](#), when the two clips are loaded on to the timeline and playback, the timecode output at points A, B and C are listed in [Table 14–14](#).

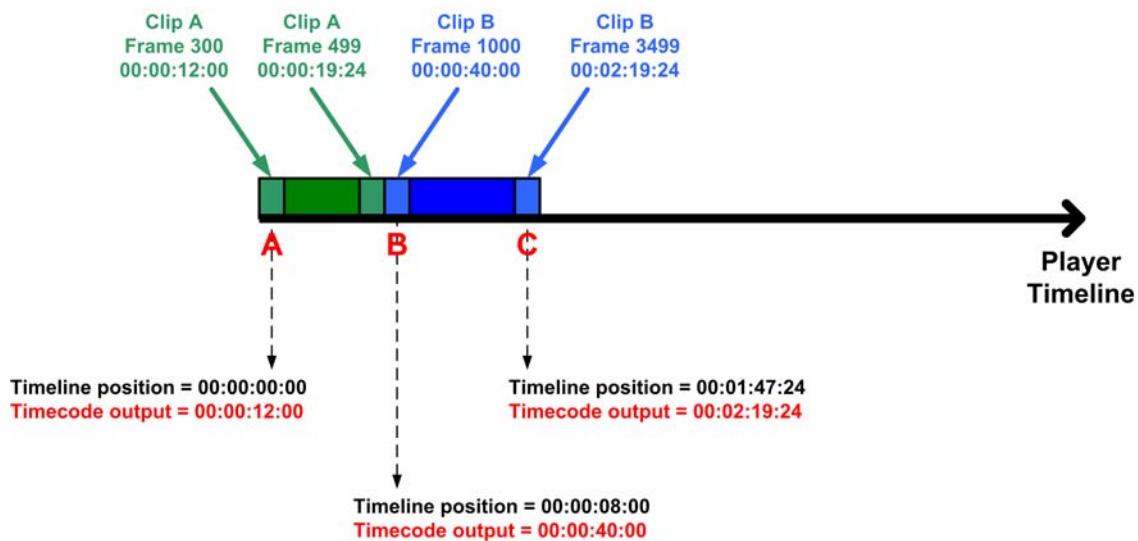


Figure 14–57: Not Locked to Clip Timeline

Table 14–14: Locked to Clip

Point	Timeline Position	MediaPort Timecode Output
A	00:00:00:00	00:00:12:00
B	00:00:08:00	00:00:40:00
C	00:01:47:24	00:02:19:24

The timecode value is not read frame-by-frame from each clip. Instead the IN point of each clip is read and used to extrapolate the remaining timecode for the particular clip. As the playback of one clip reaches the end and a new clip begins to play, the Timecode Generator repeats the action by reading the IN point of the new clip and extrapolates the remaining timecode for that new clip.

## About Cue-to-Timecode with VDCP Control

Note the following points about the “Cue-to-Timecode” selection, when choosing VDCP control for a player:



**IMPORTANT:** Many VDCP-based automation systems will not work properly when “Cue-To-Timecode” is enabled. Therefore, do not enable this feature unless directed by your automation vendor or Technical Support.

- The VDCP command “Record Init With Data (2X.2C)” accepts three arguments, namely, Clip ID, Start Position and Length. When the Harmonic server receives the VDCP commands “Record Init With Data” followed by “Record,” it writes the following metadata into the wrapper file:
  - **Start Position value:** this value is sent by the automation system to the Harmonic server
  - **Start Timecode value:** this value is the timecode present at the start of the recording

- In some cases, the Start Position value is the same as the Start Timecode value. However, it is also possible that the Start Position value could be different from the Start Timecode value.
- It is common to find clips created by Non Linear Editors such as Final Cut Pro that have only a Start Timecode value and a zero value for Start Position.
- The Harmonic ClipTool also creates clips that have only a Start Timecode value and a zero Start Position value.
- Usually, VDCP-based control systems will create clips that have both Start Position and Start Timecode values.
- When a decoder player is configured with “Cue-To-Timecode” disabled, the decoder will use Start Position to reference the first frame of video.
- When a decoder player is configured with “Cue-To-Timecode” enabled, the decoder will use Start Timecode, instead of Start Position, to reference the first frame of video.
- The majority of VDCP-based automation systems require clips to have a valid Start Position in order to cue clips frame accurately in the Harmonic server. Since many Non Linear Editors do not create clips with a Start Position value, the automation systems will assume those clips will start from position 00:00:00:00.

### Examples of Cue-to-Timecode Enabled and Disabled

The following are examples of Cue-to-Timecode enabled and disabled. For both examples, a clip with an ID of “XYZ” has been created with the following metadata:

Clip Length: 00:01:00.00

Start Position: 02:00:00.00

Start Timecode: 12:00:00.00

#### Example 1: Cue-To-Timecode Disabled

The following VDCP command will work fine:

VDCP Command	ID	Start Position	Length
Cue With Data	XYZ	02:00:00.00	00:01:00.00

The following VDCP command will fail because the decoder is using 02:00:00.00 as the first frame of video:

VDCP Command	ID	Start Position	Length
Cue With Data	XYZ	12:00:00.00	00:01:00.00

#### Example 2: Cue-To-Timecode Enabled

The following VDCP command will fail because the decoder is using 12:00:00.00 as the first frame of video:

VDCP Command	ID	Start Position	Length
Cue With Data	XYZ	02:00:00.00	00:01:00.00

The following VDCP command will work fine:

VDCP Command	ID	Start Position	Length
Cue With Data	XYZ	12:00:00.00	00:01:00.00

# Chapter 15

## Third-party Device Configuration

This chapter provides configuration and operation instructions for third-party devices in a Spectrum System. Choose from the following:

- [Connecting a Third-party Device](#)
- [Viewing Third-party Device Properties](#)
- [Changing the Third-party Device Name](#)
- [Changing the Third-party Device Description](#)
- [About Canopus ADVC-100 Support](#)



**IMPORTANT:** The procedures outlined in this section are written for qualified technical personnel, skilled at advanced networking procedures. If you have any questions, please consult with your facility's Information Service staff or contact Technical Support.

### Connecting a Third-party Device

Use this procedure to connect an Harmonic-compatible IEEE 1394 device such as a Sony codec or a Miranda DV bridge.

**To connect a third-party device:**

1. Connect the correct IEEE 1394 cable to the third-party device's IEEE 1394 port.
2. Connect the other end of the IEEE 1394 cable to a MediaDirector or to an open connector on a MediaPort.
3. The device should now appear on the **SystemManager's System** diagram.
4. To record or play back video to (or from) the third-party device, a Player must be configured and connected to the third-party device.
5. Follow the procedures for creating a Player.

Refer to [Player Configuration](#) for complete instructions.

Note the following:

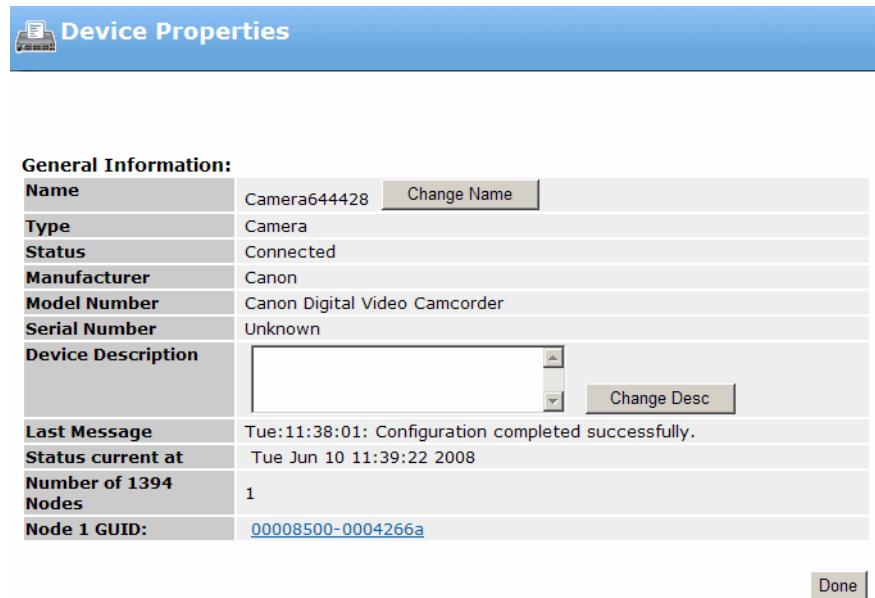
- Ensure that the video track that you connect to the third-party device is a DV 25 track. You cannot connect separate audio to a third-party device.
- During the Player creation process, you may need to set the Player's IEEE 1394 channel ID to 63. Some third-party devices do not function properly when assigned channels other than 63. You may also wish to try the "Automatic" setting for the channel ID.
- Connecting one third-party device at a time, and then creating a Player for that device can save confusion when the manufacturer does not supply ID information. In this case, the SystemManager will assign a device number.
- 6. Once the Player is fully configured, activate it on the **Player List**.

### Viewing Third-party Device Properties

On the **Third Party Properties** page you can view the third-party device's properties and also change the device's name, enter a description and assign a Player to the device.

**To view a Third Party's device properties:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click any Third-party Device heading (or icon) to display its specific **Third-party Devices** page (*Figure 15-1*).



The screenshot shows the 'Device Properties' window with a blue header bar containing a printer icon and the title 'Device Properties'. Below the header is a table titled 'General Information' with the following data:

<b>Name</b>	Camera644428	<b>Change Name</b>
<b>Type</b>	Camera	
<b>Status</b>	Connected	
<b>Manufacturer</b>	Canon	
<b>Model Number</b>	Canon Digital Video Camcorder	
<b>Serial Number</b>	Unknown	
<b>Device Description</b>	<input type="text"/> <span style="float: right;">Change Desc</span>	
<b>Last Message</b>	Tue:11:38:01: Configuration completed successfully.	
<b>Status current at</b>	Tue Jun 10 11:39:22 2008	
<b>Number of 1394 Nodes</b>	1	
<b>Node 1 GUID:</b>	<a href="#">00008500-0004266a</a>	

**Done**

**Figure 15-1: Device Properties—Third-party Device**

- **Name:** Lists the name of the selected third-party device.
- **Change Name:** Click to rename the selected third-party device. Renaming helps you locate and work with third-party devices in the SystemManager application. Refer to [Changing the Third-party Device Name](#) for instructions..
- **Type:** Lists the type of third-party device, such as "Codec" or "Camera." If the type of device cannot be determined, the label "Unknown" is shown.
- **Status:** Lists the status of the third-party device, either **Connected** or **Not Responding**.
- **Manufacturer:** Displays the manufacturer's name, provided it can be recognized by the SystemManager. If the name cannot be obtained, nothing is shown.
- **Model Number:** Displays the device's model number, provided it can be recognized by the SystemManager. If the name cannot be obtained, nothing is shown.
- **Serial Number:** Lists the device's serial number, provided that it can be retrieved by the SystemManager. Note that some third-party devices do not store a serial number internally.
- **Device Description:** Displays a scrollable multi-line description of the selected third-party device. This field is useful for entering data that clarifies the device's role.
- **Change Desc:** Click to change the third-party device's description. Refer to [Changing the Third-party Device Description](#) for instructions.
- **Status current at:** Lists the most recent date and time that the page was refreshed. Note that the page is automatically refreshed every 30 seconds, unless configured otherwise.

- **Number of 1394 Nodes:** Lists the number of IEEE 1394 nodes in the third-party device, as detected by the SystemManager.
- **Node 1 GUID:** Lists the IEEE 1394 GUID for the third-party device's node. The value is useful when troubleshooting connections with other IEEE 1394 devices (such as PCs). By clicking the **Node ID** hyperlink, the **Node Properties** page appears.
- **Done:** Click to save changes and return to the System Diagram.

At the bottom in the “**Attached Players**” section, in addition to the “Events” section, two types of hyperlinks may appear if Players are attached to the device. A hyperlink with an asterisk indicates an active player (*Figure 15–2*).



The screenshot shows the “Attached Players” section of a SystemManager interface. At the top, it says “Players attached to this device: [Test](#) ( \*\* indicates active players.)”. Below this is a “Events” section with a table of events. The table has columns: Level, Time, Event, Host, Info, Clear?, and Delete. Two rows are shown:

Level	Time	Event	Host	Info	Clear?	Delete
INFO	Tue Jun 10 11:38:01 2008	Device name changed.			<a href="#">Clear</a>	<a href="#">Delete</a>
INFO	Tue Jun 10 11:38:01 2008	Device added to network.			<a href="#">Clear</a>	<a href="#">Delete</a>

Below the table, there are buttons for “Clear All” and “Delete All”. A note at the bottom says “Refresh Interval for this page is 30 seconds.”

**Figure 15–2: Attached Players Section**

- **Active Player:** As indicated by double asterisks (\*\*), click the Active Player Hyperlink to access the **Player Properties** page.
- **Inactive Player:** Click the Inactive Player hyperlink to access the **Edit Player** page.
- **Events:** This section lists any events or alarms that are associated with this Third-party Device. If events are present, a table of events appears similar to that shown on the **View Alarms** page. Note that this event list is always unfiltered. Refer to *Viewing and/or Clearing Alarms* for alarm details.

## Changing the Third-party Device Name

Renaming may help you locate third-party devices throughout the SystemManager application.

### To change a third party's device name.

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the third-party device that you want to rename. The **Device Properties** page appears.
3. Click **Change Name** to display the **Change Device Name** page.
4. Type the new name in the text box.

Refer to *About Naming Files and System Elements* for proper naming conventions.

5. Click **Save** to return to the **Device Properties** page.

The new name now appears in the **System** diagram, in various page titles and in other third-party device-related fields throughout the application.

## Changing the Third-party Device Description

The third-party device description is useful in clarifying a particular device's role in your Spectrum System.

**To change the third party's device description:**

1. Click the **Configuration** tab to display the **Configuration** page and **System Diagram**.
2. Click the icon for the third-party device whose description you want to change. The **Device Properties** page appears.
3. Click **Change Desc** to display the **Change Device Description** page.
4. Type the new description in the text box.
5. Click **Save** to save the description and return to the **Device Properties** page. The new description appears in the **Device Description** field.

## About Canopus ADVC-100 Support

The Canopus ADVC-100 Converter allows you to convert analog video and audio to DV (25 Mbps). The converted DV streams are transferred over IEEE 1394 to the Spectrum System for use. Note the following important points:

- The ADVC-100 can be configured as a third-party device, in the normal manner.
- Refer to the Canopus documentation for product details. Refer to *Connecting a Third-party Device* for connection information.
- Ensure that the ADVC-100 is configured for record-only. Because it is a consumer product with no provision for black burst input or serial control, playback cannot be timed.
- Two ADVC-100's can be configured per bus (record-only).
- On the ADVC-100, all DIP Switches should be set to "Off" for NTSC. Set DIP Switch 1 to "On" for PAL.

# Chapter 16

## ClipTool Installation and Configuration

---

This chapter provides installation and operation instructions for Windows version of ClipTool™.  
Choose from the following:

- [\*Installing Windows ClipTool\*](#)
- [\*Launching Windows ClipTool\*](#)
- [\*Customizing a ClipTool Shortcut\*](#)
- [\*ClipTool Graphical User Interface\*](#)
- [\*Loading Clips for Playback\*](#)
- [\*Deleting Clips\*](#)
- [\*Recording Clips\*](#)
- [\*Playing Out Clips while Recording\*](#)
- [\*Keyboard Shortcuts\*](#)
- [\*Clip Dubbing and Clip Dubbing Restrictions\*](#)
- [\*Dubbing Clips\*](#)

### Choosing ClipTool for your Application

Windows ClipTool is recommended for:

- PCs in which ClipTool is frequently launched from the SystemManager application (faster loading).
- Installations where **Clip Dubbing** is performed using ClipTool.

### Installing Windows ClipTool

Use the following steps to install (or re-install) the Windows ClipTool on a PC running Windows 95 (or later). The PC must be a Pentium II (or better) with a minimum 32MB RAM and a minimum 2MB hard disk space available. The PC must be connected via Ethernet to your facility's LAN.

#### To install Windows ClipTool:

1. Uninstall the existing ClipTool application if it is already installed. This allows you to update to the latest ClipTool version.
2. Click **Start > Settings > Control Panel**. In the Control Panel dialog double click the Add/Remove Programs icon.
3. In the **Add/Remove Programs** Dialog:
  - Click **Change or Remove Programs** in the left-hand column.
  - Select **ClipTool** in the **Installed Programs** column and click **Change /Remove**.
4. Remove all instances of the ClipTool shortcut from the desktop.
5. Log on to the SystemManager application.
6. Click the **Home** tab to display the **Options** page.
7. Click the **Tool Installation** icon to display the **Tool Installation** page ([Figure 16-1](#)).



Figure 16–1: Tool Installation

8. The following pop-up message may appear:

"C:\\Temp\\Temporary Internet Files\\Content  
IE\_5\\XXXX\\CTInstall[1].exe."

If this message appears, clear Internet Explorer's temporary files cache on the SystemManager Platform as follows:

- a. Go to the **Internet Explorer Tools** tab and click Internet Options.
- b. In the **Internet Options** Window, click the **General** tab.
- c. In the **Temporary Internet Files** section, click the **Delete Files** button.
- d. In the **Delete Files** Window, check the box to **Delete All Offline Content**, then click OK.
- e. Retry the ClipTool installation.

9. Click **Install Windows ClipTool** to display the **File Download** dialog (*Figure 16–2*).



Figure 16–2: File Download Dialog

Ensure that **Run the program from its current location** is selected.

10. Click **OK** to display the **Security Warning** dialog (*Figure 16–3*).



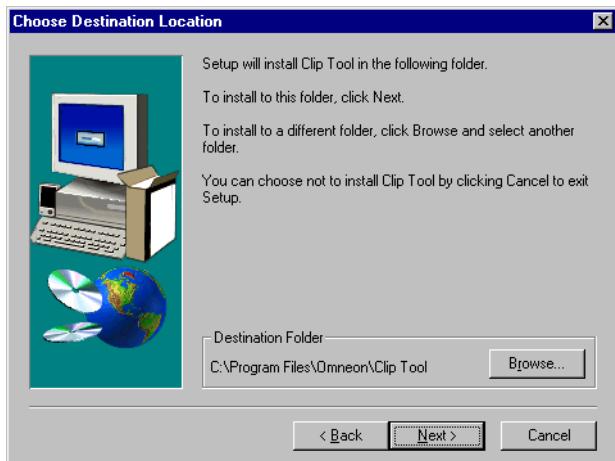
Figure 16–3: Security Warning Dialog

11. Click **Yes** to display the **Welcome Dialog** (*Figure 16–4*).



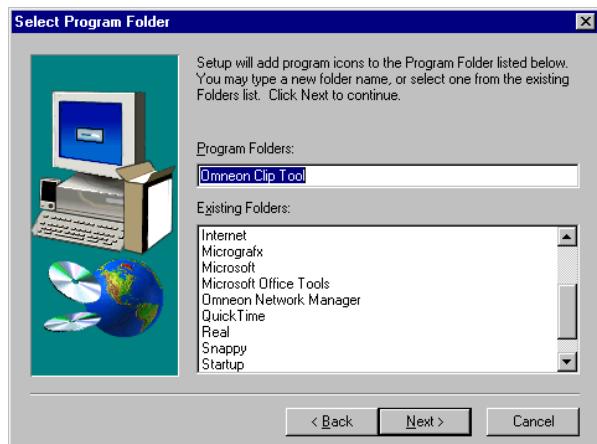
Figure 16–4: Welcome Dialog

12. Click **Next** to display the **Choose Destination** dialog (*Figure 16–5*). Leave the default destination directory as it is (recommended) or click **Browse** and select a different destination.



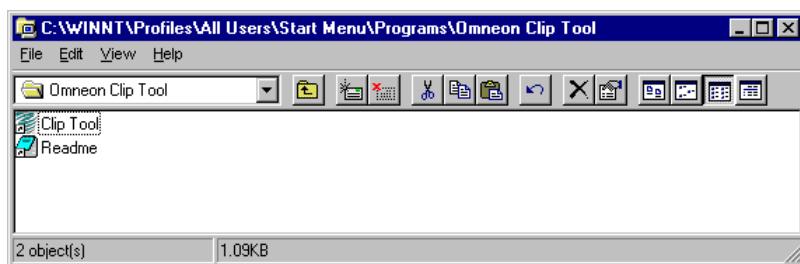
**Figure 16–5:** Choose Destination Dialog

13. Click **Next** to display the **Select Program Folder** dialog (*Figure 16–6*). Leave the default folder **Omneon Clip Tool** as it is (recommended) or choose a different folder.



**Figure 16–6:** Select Program Folder Dialog

14. Click **Next** to begin copying files.
15. When copying has completed, click **OK** in the **Information** dialog.
16. *Figure 16–7* illustrates the **Clip Tool Profiles** dialog (which remains open on your desktop). Copy the ClipTool shortcut to the desktop using the standard copy/paste method.



**Figure 16–7:** Clip Tool Profiles Dialog

This completes the Windows ClipTool installation procedure.

## Launching Windows ClipTool

Windows ClipTool must be assigned to a specific MediaDirector host and a specific Player. You can run multiple ClipTools simultaneously on a PC, but a new ClipTool window is required for each Player.

Keep the following important points in mind:

- If you launch ClipTool by clicking the **Open Hyperlink** on the **Player List** (in the SystemManager application), the **MediaDirector/Player** dialog is bypassed. This occurs because on the **Player List**, you are by default selecting a valid Player that is *already* attached to a MediaDirector.
- If this is the *first time* that you click the **Open hyperlink**, you will see a dialog *similar* to the installation dialog. Choose the **Open this file from this location** button, clear the **Always Ask** check box, and click **OK**. This procedure will not need to be repeated again.

### To launch Windows ClipTool:

1. Ensure that Windows ClipTool is properly installed.
2. Ensure that audio and video sources (and monitors) are connected to each MediaPort.
3. Launch Windows ClipTool by clicking **Start > Programs > Omneon Clip Tool > Clip Tool**. When no MediaDirector is specified, or when the specified MediaDirector cannot be contacted, the **MediaDirector/Player** dialog (*Figure 16–8*) is displayed.



Figure 16–8: Choose a MediaServer and a Player Dialog

When the MediaDirector host is known, the **MediaServer Name** field is filled in, the Players on that MediaDirector host are automatically listed and the focus is set to the **Available Players** box.



**IMPORTANT:** If you attempt to open ClipTool by clicking the Open hyperlink from the Player List page, and the following error appears, then security settings in your browser may be preventing ClipTool from being launched (refer to *Figure 16–9*).



Figure 16–9: Security Alert Message

- a. Click **OK**, and then re-open SystemManager by typing the local IP address for your SystemManager in the address bar of your browser.
- b. Log in to SystemManager.
- c. From SystemManager, open the Player List, and then click the **Open** hyperlink.
4. In the **MediaServer Name** field (*Figure 16-10*), type the current name, DNS name or IP address of the desired MediaDirector host. To check a MediaDirector host's *current* name, click the **Configuration** tab in the SystemManager application. The name appears beside the small MediaDirector icon.



**NOTE:** Your system can have multiple MediaDirectors. The ClipTool must be associated with a MediaDirector host before it can be linked to a Player on that host.

5. With the MediaDirector host name entered, click the **List Players** button (you can also press **Tab** or **Enter**). The label "Searching" appears, after which the list of all *active* players for the selected MediaDirector host appears in the **Available Players** box.



**Figure 16-10: Choose a MediaServer and a Player Dialog—List Players Button**

- If only one active Player exists, it is selected automatically and the dialog closes (as if **OK** had been pressed).
6. With multiple Players listed, highlight a Player in the list and click **OK** (or press **Enter**). Arrow keys move the highlight from one Player to the next.



**NOTE:** If required, click **Cancel** (or press **Esc**) to cancel the selection of a MediaDirector and Player, and close the ClipTool application.

Once a MediaDirector host and Player have been selected, the dialog closes and the main ClipTool window appears. Refer to *Main Window* to continue.

## Customizing a ClipTool Shortcut

This procedure allows you to place a convenient ClipTool icon (shortcut) on the desktop which when clicked, loads ClipTool and calls a specific Player and MediaDirector host. This method bypasses the **MediaDirector/Player** dialog.

### To customize a ClipTool shortcut:

1. Ensure that Windows ClipTool is properly installed.
2. Run Windows "Notepad" application (**Start > Programs > Accessories > Notepad**).
3. Type the name (or IP address) of the target MediaDirector host and Player on a single line, separated by a colon. For example:  
DIR01046:Sun\_Play
4. On the Notepad **Menu Bar**, click **File > Save As** to display the **Save As** dialog.
5. In the **Save As** dialog, click the **Desktop** icon in the left-hand column.

6. In the **File Name** field, type a name for this ClipTool's shortcut, followed by the ".player" extension. For example:  
Sun\_Play.player
7. Click **Save**. This places a ClipTool shortcut on the desktop.
8. Close Notepad by clicking the **X**, or by clicking **File > Exit**.

When the shortcut is double-clicked, a ClipTool opens with the specified MediaDirector host and Player. To edit the shortcut, right-click it on the desktop, then click **Open With > Notepad**. This launches the Notepad application and allows you to change the shortcut's attributes.



**NOTE:** When using non-English character sets, you should save the file as UTF-8.

---

The previous procedure uses the default clip directory, as set in the SystemManager on the **Edit Player** page (in the **Default Clip Directory** field). If you want to override the default clip directory in the ClipTool shortcut, and enter a different "specific" clip directory, add the directory's name to the ".player" file (as created above in step 3). For example:

```
DIR01046:Sun_Play/fs1/news.dir
```

This shortcut, when placed on the desktop, opens the Player "Sun\_Play" on MediaDirector **DIR01046**, and specifically selects the "**news.dir**" directory on the "**fs1**" File System, for use with all new and previous clips.

## ClipTool Graphical User Interface

The Windows ClipTool is a software component that provides a graphical user interface to monitor and control Players. You can install and launch Windows ClipTool on any computer that has TCP/IP connectivity to the SystemManager and MediaDirector. The Windows ClipTool can monitor any Player's operation, and manually control the Players through a VTR-like control panel.

The ClipTool window provides four basic categories of clip control:

- **Transport Control Functions** (such as Play, Stop, Record, and Shuttle)
- **Clip Management Functions** (such as Create Clip, Delete Clip and View Clip List)
- **Display Functions** (such as displaying frame count and Player status)
- **Editing Functions** (such as Mark In, Mark Out and Clear Marks)

Players do not need to have ClipTools running for them to work. (Automation systems can control Players, for example.) If you exit from the Windows ClipTool or start a new one, it does *not* affect the Player; only explicit actions do.



**NOTE:** The Windows ClipTool application has been pre-installed on the SystemManager platform. However, remember that Windows ClipTool can be installed on any PC that is connected to the MediaDirector and SystemManager using TCP/IP. Refer to [Installing Windows ClipTool](#) for installation instructions.

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## Main Window

[Figure 16-11](#) illustrates two sample Windows ClipTool **Main Windows** – one with the playlist hidden and the other with the playlist visible.



Playlist Hidden

Playlist Visible

Figure 16-11: Playlist Hidden and Visible Comparison

The Windows ClipTool **Main Window** is a control panel that cannot be resized. The only exception is that by clicking the **List** button, the **Clip List Window** is alternately shown or hidden. The **Clip List Window** contains *this Player's* playlist, with the current active clip highlighted (selected).

Within the **Main Window**, VTR-style controls are labeled for clarity, and all controls have pop-up tooltips. The tooltips describe the control's function, and list any keyboard shortcuts that are *not* already indicated by the GUI. For example, if you place your mouse over the **Stop** button, **Alt+S** is not shown as a pop-up “tooltip.” This occurs because the underlined **S** in the **Stop** button's label indicates that pressing **Alt+S** is the keyboard shortcut for the **Stop** button. The tooltip **Shift+Space** is shown because the GUI does not provide this label.

Several fields in the **Main Window** are *time* fields (**Duration**, **In-point**, **Out-point**, and **Position**). They display time either as raw frame counts or as timecode — depending on a user setting.

ClipTool is arranged into four different groups of controls and displays. From top to bottom, these are the **Clip Status Area**, the **Editing Area**, the **Transport Controls**, and the **Clip Management Area**.

## Clip Status Area

[Figure 16-12](#) illustrates a sample **Clip Status** area.



Figure 16-12: Clip Status

The **Clip Status** area is provided for information, allowing the user to obtain quick status on the current Player, MediaDirector and Clip. The following areas are included:

- **Title Bar** – Lists the Player name, the selected MediaDirector and the current directory from which clips will be loaded, and the application name (ClipTool). The directory is also the one in which new clips will be saved.
- **Menu Bar** – Provides three menus for ClipTool functions: **File**, **Setup**, **Help**.
- Refer to [Menus](#) for details.
- **Clip Name** – This field lists the name of the currently active clip.
- **Duration** – This field shows the specified duration of the current clip. Note:
  - When recording a clip, the Duration is the limiting length for the clip, as specified when the clip was created – it is not the current amount on disk.
  - When a recording is stopped, the Duration is adjusted to be equal to the amount recorded.
  - When playing back a recorded clip, this field shows the Duration between the clip's in-point and out-point – if any have been set.

This readout is affected by the **Timecode** and **Frame Count** selections in the **Setup** menu.

Refer to [Menus](#) for details on the **Setup** menu.



**NOTE:** ClipTool synthesizes non-drop frame timecode from the frame numbers that are embedded in a clip. Timecode always starts at 00:00:00:00. ClipTool does not read the actual timecode in the clip itself unless that information is carried by the first and last recorded frame counts in a clip's information structure.

## Menus

This section discusses the three **Menu Bar** headings and their associated functions.

### File Menu

Click **File** to display the **File** menu as shown in [Figure 16–13](#).



**Figure 16–13: File Menu**

- Click **New Clip** to open the **New Clip** dialog.

Refer to [Recording Clips](#) for instructions on recording new clips.

- Click **Load Clips** to open the **Load Clips** dialog.

Refer to [Loading Clips for Playback](#) for instructions on loading clips.

- Click **Eject** to eject all clips in the playlist and place the Player in the **Stopped** mode, showing E-E video.

- Click **Change Current Directory** to display the **Type or Select a Directory** dialog, a sample of which is shown in *Figure 16–14*.



**Figure 16–14:** Type or Select a Directory

To change directories, type the desired directory name, or click the drop-down arrow and choose from a list of directories to which you have *already* connected during *this* run of ClipTool. The drop-down box does not retain a list of directories once the ClipTool application is closed.



**NOTE:** The directory that appears by default depends on the entry in the Default Clip Directory field on the Player's Edit Player page. Refer to [Loading Clips for Playback](#) for more information.

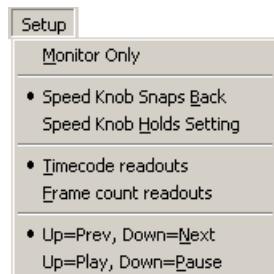


**IMPORTANT:** Changing the Player's Clip Directory using ClipTool will not affect the Clip Directory that is used by other ClipTools, nor will it affect the Clip Directory used by control applications (for example, VDCP, OmniBus, BVW, etc.).

- Click **Dubbing** to initiate the clip dubbing procedure, and display the **Choose Recording MediaDirector/Player** dialog.  
Refer to [Clip Dubbing and Clip Dubbing Restrictions](#) for instructions.
- Click **Exit** to exit the Windows ClipTool application.

### Setup Menu

Click **Setup** to display the **Setup** menu as shown in *Figure 16–15*.



**Figure 16–15:** Setup Menu

- Check **Monitor Only** to place the ClipTool in a special mode in which all controls are grayed out. This view-only mode is designed for situations in which you (or others) want to monitor clip activity (such as with an automation system), but also want to prevent accidental clip control. To return to full control, simply clear the option.
- Click **Speed Knob Snaps Back** to cause the **Speed Knob** to always snap back to 0 (zero) when it is released.

- Click **Speed Knob Holds Setting** to cause the **Speed Knob** to remain at its current position (and speed) when it is released.
- Refer to [Editing Area](#) for details on the **Speed Knob**.
- Click **Timecode Readouts** to cause all time-related fields and readouts in the ClipTool to display timecode.
- Click **Frame Count Readouts** to cause all time-related fields and readouts in the ClipTool to display frame counts.
- Click **Up=Prev, Down=Next** to change the behavior of the keyboard's arrow keys:
  - UP ARROW — For a single clip in the list, pressing UP ARROW jumps to the head of the clip and maintains the current mode (play or pause). For multiple clips, UP ARROW jumps to the head of the previous clip in the list and maintains the current mode.
  - DOWN ARROW — For single clip in the list, pressing DOWN ARROW jumps to the tail of the clip. For multiple clips, DOWN ARROW jumps to the head of the next clip in the list and maintains the current mode (play or pause).
- Click **Up=Play, Down=Pause** to change the behavior of the keyboard's ARROW keys:
  - UP ARROW — Press to play the current clip in the list.
  - DOWN ARROW — Press to pause the current clip in the list.

### Help Menu

Click **Help** to display the **Help** menu as displayed in [Figure 16–16](#).

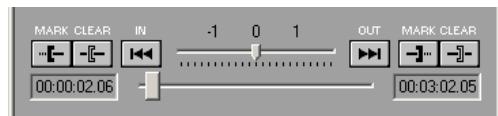


[Figure 16–16: Help Menu](#)

- Click **About ClipTool** to display the **About ClipTool** dialog, which provides current ClipTool version and copyright information.

### Editing Area

[Figure 16–17](#) illustrates the **Editing** area.



[Figure 16–17: Editing Area](#)

Immediately below the **Clip Status Area**, the **Editing Area** provides tools for marking and trimming clips. On the left-hand side, controls are grouped that affect clip's in-point. On the right-hand side, controls affect clip's out-point. The following controls are included:

- **Mark [In], Mark [Out]** — These two buttons set the clip's in-point and out-point, the starting and ending frames for clip playback. Clicking a **Mark** button sets that point on the clip's current frame. Both the in-point and out-point are *inclusive*; the frames thus marked are the first and last frames to be shown during clip playback.



**NOTE:** By contrast, in some editing applications, the out-point is exclusive – that is, the first frame not to be shown. Older linear editors worked this way, but many newer non-linear editors use inclusive out points.

- **Clear [In], Clear [Out]** — Clicking a **Clear** button clears the corresponding marked point.

Please note:

- When no in-point is set, the default in-point is the first frame of the clip and the corresponding Clear button is grayed out and disabled.
- When no out-point is set, the default out-point is the last frame of the clip and the corresponding Clear button is grayed out and disabled.
- The Time Fields immediately below the Mark and Clear buttons show the clip's current in-point and out-point. These fields are affected by the Timecode and Frame Count selections in the Setup menu.

Refer to [Menus](#) for details on the **Setup** menu.

- **[Goto] In, Out** — Click a **Goto** button (adjacent to the **Speed Knob**) to jump to the current in-point or out-point, respectively.

- **Speed Knob** — Click and drag the **Speed Knob** to adjust playback speed to any of the following multiples of real time:

-32, -16, -8, -4, -2, -1, -1/2, -1/4, -1/16, -1/32, 0, 1/32, 1/16, 1/8, 1/4, 1/2, 1, 2, 4, 8, 16, 32.

- As you click and drag the knob, the **Transport Status** fields update with the new speed. By default, the **Speed Knob** snaps back to zero when released, but it can be set to hold its current setting through the **Setup** menu. The **Speed Knob** also serves as an indicator — it moves to reflect the speed that is set using other ClipTool commands.

Refer to [Menus](#) for details on the **Setup** menu.

- **Timeline** — The **Timeline** represents the current “selected area” within the clip — the area between the default (or marked) in-point and out-point. The **Timeline**’s handle indicates the point of playback; it moves along its track as the clip progresses. Dragging the handle moves the current clip position. The **Timeline** dynamically adjusts so that the current in-point is always at the left-most limit and the current out-point is at the right-most limit.

## Transport Controls

[Figure 16–18](#) illustrates a sample **Transport Control** area.



Figure 16–18: Transport Control

ClipTool’s transport controls comprise the VTR-style buttons and readouts. Note that most transport controls are grayed-out when no clips are loaded.

The following controls are included:

- **Transport Status** – This readout displays ClipTool’s current transport status. Depending upon the current ClipTool mode, the following “status” labels are shown:
  - Rewind (-32x to -2x)
  - Reverse Play (-1x)
  - Slow Reverse Play (-1/2x to -1/32x)
  - Paused (0x, still frame shown)
  - Stopped (0x, E-E mode)
  - Slow Forward Play (1/32x to 1/2x)
  - Play (1x)
  - Fast Forward (2x to 32x)
  - RECORDING (Shown when recording is in progress)
  - Cued for Record (Shown when the transport is in the appropriate cued status. This mode is the state set by ClipTool when a new clip is created, allowing recording to commence immediately.)
  - Cued for Play (Shown when the transport is in the appropriate cued status. This mode is usually not seen, except when it is set up by another control program, or when ClipTool is preparing to dub the timeline.)
  - Transport Speed – This readout (to the right of Transport Status) shows the current playback speed, from “-32 x” to “32 x”
  - Clip Position – This readout shows the current frame of the current clip (the frame at the handle’s current location). This readout is affected by the Timecode and Frame Count selections in the Setup menu.

Refer to [Menus](#) for details on the **Setup** menu.



**NOTE:** The three readouts (Transport Status, Transport Speed, and Clip Position) display white text on a red background while recording is in progress. The Transport Status field flashes.

- **Shuttle buttons** – ClipTool supports the following transport speeds, as multiples of normal forward play:
  - 32, -16, -8, -4, -2, -1, -1/2, -1/4, -1/16, -1/32, 0, 1/32, 1/16, 1/8, 1/4, 1/2, 1, 2, 4, 8, 16, 32
  - Clicking the **left Shuttle** button changes the Clip’s current speed to the next faster reverse speed.
  - Clicking the **right Shuttle** button changes the Clip’s current speed to the next faster forward speed.
  - Clicking a **Shuttle** control while the Player is stopped plays the Clip at -1/32x or 1/32x, respectively.
- **REW** – (Rewind) Plays the clip at -32x.
- **REV** – (Reverse) Plays the clip at -1x.
- **PAUSE** – Plays (pauses) the clip at 0x, presenting a still frame. If no clip is loaded, black is played.
- **PLAY** – Plays the clip at 1x (normal play mode).



**IMPORTANT:** Clips can only be played back using a Player that has the same configuration as the Player that was originally used for content recording. For example, if a clip was recorded using a DV 25 Player, a DV 25 "playback" Player must be used to play it out. Note that DV and DVCPRO clips can be played back-to-back because they both use a 25Mbps bitrate.

- **FFWD** — (Fast Forward) Plays the clip at 32x.
- **REC** — (Record) Records a new clip at 1.0x.
- **JOG** buttons — Pauses any playback in progress, and backs up (left **JOG** button) or advances (right **JOG** button) the clip by one frame.
- **STOP** — Stops the playback or recording of a clip, leaving the Player in E-E mode.
- **Loop** — Check the Loop check box to cause the playlist to restart upon reaching its end, in either direction. In this mode, the clip plays continuously until Stop is clicked. Note the Player must be stopped before the Loop mode can be activated.

## Clip Management Area

*Figure 16-19* illustrates a sample Clip Management area.

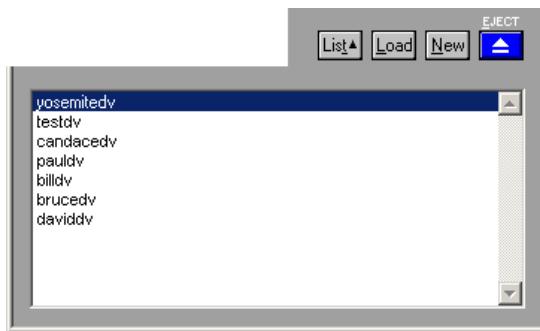


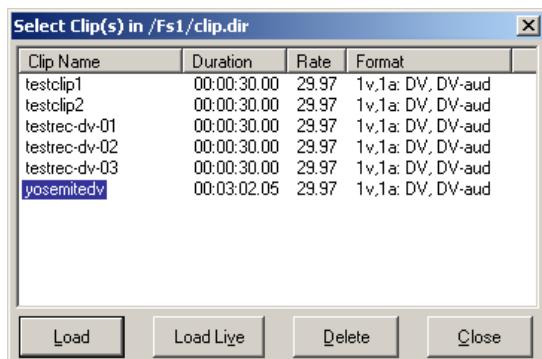
Figure 16-19: Clip Management

The four **Clip Management** buttons allow the user to list clip, load clips, eject clips and create new clips for recording. The following controls are included:

- **List** — Click to alternately show and hide the playlist (within the **Clip List Window**). A small triangle on the button itself points *down* when the playlist is hidden or *up* when the playlist is shown, to indicate the "next window action" when the button is pushed.
- **Load** — Click to open the **Load Clips** dialog.
- Refer to [Loading Clips for Playback](#) for instructions on loading clips.
- **New** — Click to open the **New Clip** dialog.
- Refer to [Recording Clips](#) for instructions on recording new clips.
- **Eject** — Click to eject all clips in the playlist and place the Player in the **Stopped** mode, showing E-E video.
- **Clip List Window** — This window (when open) shows the clips on the Player's timeline. The current clip is highlighted. You can move the highlight by clicking another clip with the mouse, and change the current clip on the timeline.

## Loading Clips for Playback

Click the **Load** button in the **Clip Management Area** (or click **File > Load Clip**) to display the **Load Clips** dialog, a sample of which is shown in *Figure 16–20*.



**Figure 16–20:** Load Clips Dialog

The **Load Clips Dialog** displays a scrollable, multi-column list of clips in the File System. You can resize the columns by clicking and dragging the boundary between the column headers.

- The **Clip Name** column shows the clip's name.
- The **Duration** column shows the total clip length (regardless of stored in and out-points).
- The **Rate** column shows the clip's frame rate.
- The **Format** column shows how many video and how many separate audio channels are recorded, followed by a list of up to six separate channels' worth of information (such as the selected video format and any associated audio or VBI channels).

The list is arranged in alphabetical order and shows all clips in the current directory (not just the clips that can be loaded in this ClipTool's player). By listing all clips, users can easily see what names have been used (and if desired, what clips they want to delete).

To select clips, several methods are available:

- Use the **Arrow** keys to move the highlight, or simply click the mouse on the desired clip.
- Hold down **Shift** and click to select a continuous range.
- Hold down **Ctrl** and click to select a discontinuous range.

To load the clip(s) in the **Clip List Window**, several methods are available:

- Double-click to enter a single clip.
- **Shift**+double-click to enter a range of clips.
- Press **Enter** to enter a single clip or a range of clips.
- Click the **Load** button to enter a single clip or a range of clips.



**NOTE:** When multiple clips are selected, they are loaded in alphabetical order. To load clips in a different order, select and load them one at a time. Loading does not close the dialog.

When clips are loaded, the ClipTool's title bar changes:

- “<clip name> loaded” for a single clip

- “**X of Y clips loaded**” for multiple clips (where X is the number of clips successfully attached out of Y total clips selected).

If an error occurs, the clip(s) will not be loaded, and an error message is shown in the Title Bar.

When clips are loaded, all ClipTool buttons are activated except for the **Record** button. The clips can now be played back using the **Transport Controls**.

Additional controls are as follows:

- Click **Load Live** to load a clip with a duration of 24 hours instead of its listed duration. In this manner, a clip that is currently being recorded (a “**live**” clip) can be loaded with an indeterminate out point, allowing it to be played up to (and past) its current length.
- Click **Close** (or press the **Esc** key) to close the dialog without performing further actions.

## Deleting Clips



**IMPORTANT:** Use caution when deleting clips. Once deleted, clips are permanently removed from the File System, and cannot be recovered.

### To delete clips:

1. Click the **Load** button in the **Clip Management Area** to display the **Load Clips** dialog.
2. In the **Load Clips Dialog**, select the clip(s) that you want to delete. You can select a single clip or a range of clips.
3. Click the **Delete** button. When the **Confirm** dialog appears, click **Yes** to delete the clip(s), or **No** (or **Cancel**) to cancel the procedure without deleting any clips.



**NOTE:** If the system is unable to delete a clip, there are two possible reasons. Either the clip's “Protection Bit” has been set by an external application (such as an automation system), or the clip is on a timeline.

## Recording Clips

Click the **New** button in the **Clip Management Area** (or click **File > New Clip**) to display the **New Clip** dialog (Figure 16–21). The dialog appears in one of two forms, depending on whether the Windows ClipTool’s Time Mode is set to “**Timecode**” or “**Frame Count**” readouts. This selection is performed on the **Setup** menu.

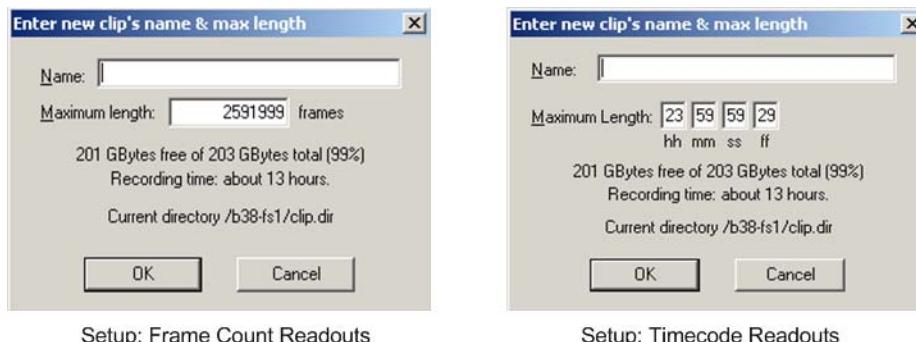


Figure 16–21: New Clip Dialog

Note the following important points:

- The **Name** field is focused when the dialog is displayed.
- Clip names are limited to 63 characters or less in length.
- Refer to [About Naming Files and System Elements](#) for proper naming conventions.
- The **Maximum Length** field (in both dialogs) is preset to 24 hours minus one frame, but this value can be changed if desired. This setting only limit how much storage can be allocated; if you stop recording before hitting the limit, the clip duration will be set to the amount of material actually recorded.
- Both dialogs show the current directory, the amount of free space and total space on the current File System, plus an estimate of the free time available for recording (using the current Player's format). For example, a DV Player will indicate more recording time available than a 10-bit SDI Player will.

**To record a clip:**

1. Enter the clip name.
2. Enter the clip's (estimated) maximum length, or leave the default value.
3. Click **OK** or press **Enter** to accept the new clip name and duration. Click **Cancel** (or press **Esc**) to cancel the dialog and discard the new clip.
4. When **OK** is clicked, an empty clip is created and attached it to your timeline. The Player is placed in the “Cued for Record” mode and the **REC** (Record) button is enabled.
5. Click **REC** to begin recording.
6. Click **Stop** to end the recording.

## Playing Out Clips while Recording

When using ClipTool, the **Load Live** function allows users to load a clip with an open-ended duration of 24 hours instead of its listed duration. In this manner, a clip that is currently being recorded (a “live” clip) can be accessed by a “Playout” Player, loaded with an indeterminate out-point, and played back while the recording continues.

System problems can occur in this mode if the playback point (on the “Playout” Player) gets too close to the point of recording. In order to avoid problems, note the following important rules:

- If the “Playout” Player is on the *same* MediaDirector host as the “Record” Player, do not select a playback point that is within 10 seconds of the record point. Maintain a minimum 10-second safe zone between the playback and record points.
- If the “Playout” Player is on a *different* MediaDirector or host from the “Record” Player, do not select a playback point that is within 40 seconds of the record point. Maintain a minimum 40-second safe zone between the playback and record points.

These rules apply to ClipTool, the Spectrum API, and any automation system that is controlling a Player.

## Keyboard Shortcuts

[Table 16-1](#) lists keyboard shortcuts that are available with the Windows ClipTool. [Table 16-2](#) lists specific keyboard shortcuts for the ClipTool.

**Table 16–1: ClipTool Window Shortcuts**

ClipTool Window Shortcuts	Action
Alt+F4	Exit the ClipTool application
F10, Alt (by itself)	Select first menu
Alt+<underlined character>	Same as pressing the button associated with that character.
ENTER	Accept dialog settings
Tab	Focus next field
Shift+Tab	Focus previous field
Esc	Cancel Dialog
Ctrl+X	Cut text or timecode entry
Ctrl+C	Copy text or timecode entry
Ctrl+V	Paste text or timecode entry

**Table 16–2: ClipTool Specific Shortcuts**

ClipTool Specific Shortcuts	Action
SPACE	Toggles between PLAY and PAUSE. If the Player is stopped, the first SPACE starts PLAY mode, if the clip is in motion SPACE causes a PAUSE. Pressing SPACE in record mode stops recording.
Shift+SPACE	STOPs the playout or recording.
J, K, L	Motion control.
I	Mark In at the current position (set the in-point).
Shift+I	Go to in-point.
Shift+Ctrl+I	Clear in-point.
O	Mark Out at the current position (set the out-point).
Shift+O	Go to out-point.
Shift+Ctrl+O	Clear out-point.
Left, right arrows	Jog back, Jog forward (pause playback; move one frame back, forward). Jogs happen along the entire timeline, crossing clip boundaries as needed.
Shift+left, right arrows	Jog 5 frames back, 5 frames forward.
Ctrl+ left, right arrows	Jog 1 second back, 1 second forward.
Shift+Ctrl+ left, right arrows	Jog 1 minute back, 1 minute forward.

ClipTool Specific Shortcuts	Action
Alt+ left, right arrows	Same as pressing the Left Shuttle and Right Shuttle buttons
Up arrow	Configurable: <b>Setup &gt; Up=Play, Down=Pause:</b> Plays the current clip. <b>Setup &gt; Up=Prev, Down=Next:</b> For single clip in list, jumps to head of clip and maintains current mode (play or pause). For multiple clips, jumps to head of previous clip in the list and maintains current mode (play or pause).
Down arrow	Configurable: <b>Setup &gt; Up=Play, Down=Pause:</b> Pauses the current clip. <b>Setup &gt; Up=Prev, Down=Next:</b> For single clip in list, jumps to tail of clip. For multiple clips, jumps to head of next clip in the list and maintains current mode (play or pause).
PgUp	Jump up: pauses (if the clip is playing) and jumps to the head of the clip, then the head of the previous clip on the next press, etc.
PgDn	Jump down: pauses (if the clip is playing) and jumps to the tail of the clip, then the tail of the next clip on the next press, etc.
Home	Jump home: jumps to the head of the playlist. Playback mode is not changed; playback continues at the same speed after the jump.
End	Jump end: jumps to the head of the last clip, then to end of the playlist. Playback mode is not changed; playback continues at the same speed after the jump.

JKL keys are a common NLE shortcut for motion control:

- Pressing **J** or **L** alone works like pressing the left and right shuttle buttons, except that speeds below 1x are not selected. The speeds obtainable are thus -32, -16, -8, -4, -2, -1, 1, 2, 4, 8, 16, and 32, listed as multiples of normal forward play speed.
- Pressing **J** changes the current speed to the next leftward speed (towards faster reverse speeds), while pressing **L** changes the current speed to the next rightward speed (towards faster forward speeds).
- When stopped or paused, or in slow play, pressing **L** starts forward playback at normal speed, while pressing **J** starts reverse playback at normal speed.
- **J** and **L** do not auto-repeat. To speed up or slow down (move to the next speed setting), you must release the key, and then press it again.
- Pressing **K** pauses the video.

- Pressing **J** and **K** in combination, or **K** and **L** in combination, causes slow (quarter-speed) playback in reverse or forward respectively. Releasing **J** or **L** while **K** is pressed pauses playback. Releasing **K** while **J** or **L** is pressed starts reverse or forward play at normal speed until **K** is pressed again or the **J** or **L** key is released, at which point playback pauses.

## Clip Dubbing and Clip Dubbing Restrictions

Clip dubbing is a special Windows ClipTool function (configured in the SystemManager) by which you connect a **Source Player** to one or more **Target Players**, and trigger all Players in sync in order to copy the material that is present on the source Player's timeline. The Target "recording" Players may be located on the same MediaDirector as the Source Player, or on other MediaDirectors.



**NOTE:** Clip dubbing is not implemented in Java ClipTool. Use Windows ClipTool for this function.

Two types of connections can be made between the Source Player and the Target Player:

- A direct IEEE 1394 connection may be used, in which case the dubbed material is a direct copy of the source. For example, if a DV 25 clip is the source, a DV 25 clip is recorded. This type of connection cannot be used between Players on a single MediaDirector, but it can be used between multiple MediaDirectors. Note that Long GOP MPEG can be dubbed with direct IEEE 1394 connections, if you dub *one clip at a time*.
- MediaPorts can be used, with a physical (BNC) connection from the output of the source MediaPort to the input of the target MediaPort. This configuration allows a format conversion during the dubbing process. For example, if a DV 25 clip is the source, an MPEG clip can be recorded on the target. This type of connection can be used on a single MediaDirector or between multiple MediaDirectors.

During the dubbing process, ClipTool controls a single "gang" comprised of a Source Player (the Player normally controlled by ClipTool) and one or more Target Players that are slaved to the source. The "gang" is invisible to normal ClipTool operations, and consumes no processing time unless dubbing is in progress. When a dub is made, only the Source Player's status is reflected in the ClipTool's user interface.

A gang may be specified before ClipTool is started. This function is performed in the SystemManager application, in the **Clip Dubbing** section of the **Edit Player** page.

The "preset" gang may have an arbitrary number of Target Players in it, and this gang will be used whenever dubbing is invoked. If no gang was specified prior to startup, ClipTool asks the user for a single Recorder to connect for dubbing, when the dub function is requested.

Note the following important points:

- ClipTool's dubbing function simply records the current contents of the Source Player's timeline onto the ganged Target Players.
- The source timeline may include one clip or a sequence of clips (for DV and non-Long GOP MPEG clips). For Long GOP MPEG clips, only one clip may be dubbed at a time.
- You can dub to identically named clip(s) on the Target Player(s), or the entire timeline may be dubbed to a single new clip on the Target(s). If there are multiple clips on the Source timeline in the latter case, the dub can be thought of as compiling a new clip from edited segments of existing clips. In this way, ClipTool serves as a simple, cuts-only editor.

When dubbing is invoked, ClipTool performs a series of important tests:

- Are all Recorders connected, communicating, and enabled for recording?

Dubbing cannot proceed if any communication or connection function fails, or cannot be performed.

- Do all gang members reside on the same MediaDirector, or share the same timecode reference?

If all gang members are on the same MediaDirector, they can all be triggered on the same reference frame count. If all share the same reference timecode, they can all be triggered frame-accurately. If neither condition is met, frame-accurate recording cannot be guaranteed. ClipTool will refuse to dub unless the gang has a common reference, or all members reside on the same MediaDirector.

- Are all gang members running at the same frame rate?

All ganged Players must be running at the same frame rate for correct dubbing.

- Are there any duplicate clip names in the timeline?

If clips are to be dubbed to clips of the same name on the destinations, only one clip (or clip segment) of a given name may be present on the target timeline, otherwise the first dub to that name will be overwritten by the following dub of that name.

Multiple copies of a clip may still reside on the source timeline, as long as you dub that timeline to a single target clip with a *new name*. For example, if you have an hour-long sports clip that contains many highlights, you can place multiple instances of it (each with the same name) on the source timeline. You can then trim heads and tails on each clip to isolate desired highlights. The resulting “edited” version can be dubbed to a Target Player, but the target clip must have a different name than the source clips.

- Do any destination names conflict with the names of existing clips?

ClipTool will not allow you to overwrite existing clips. If clips are found on the target players’ File Systems that have the same names as source clips, a warning is issued. This rule applies both to the names of the source clips and to names specified by the user. ClipTool only allows you to dub clips with non-conflicting names.

For example, if you want to convert a DV clip named “Harmonic” to an SDI clip named “Harmonic,” the system will not permit it if the source and target files are in the same File System. In this case, rename the target clip to perform the dub.

- Do the Target Players have enough space available to record the timeline?

ClipTool compares the length of the source timeline with the “free time” reports from each of the Target Players. If any of the targets fall short of the required time, ClipTool will warn the user. Dubbing, however, may still proceed because the “free time” estimate is a dynamic number that changes depending on the actions of many File System processes. The user can also cancel the dub and make adjustments accordingly.

Once all the tests have been passed, dubs proceed in real time. ClipTool shows the source Player in play mode. All controls other than **Stop** are disabled, and the **Transport Status** readout displays a red label that alternates between “**DUBBING**” and the current transport mode.

Dubbing proceeds until the source timeline has completed. Dubbing is halted if ClipTool loses contact with any Source or Target Player, if any error is reported, if the Source Player stops playing, if any Target Player stops recording, or if any targets report “no free space” left. Click **Stop** at any time to halt the dub prematurely. Upon conclusion of the dub, all Target Players are stopped and their timelines are ejected. A dialog displays a summary of the actions taken.

## Clip Dubbing Restrictions

When using the clip dubbing feature in Windows ClipTool or when performing dubbing using the Spectrum API, note the following:

- All Players concerned should have MediaPorts attached (and the MediaPorts should be connected to each other for the dub), or
- None of the Players should have MediaPorts attached (and IEEE 1394 dubbing should be performed).

Internally, Spectrum Players detect the presence or absence of MediaPorts, and adjust their timing appropriately, as MediaPorts add a certain amount of delay to the video. When no MediaPorts are connected and direct IEEE 1394 dubbing occurs, the source Player and recording Player start at the same time, and a frame-accurate dub occurs. When a MediaPort-to-MediaPort dub is performed, the source Player and the recording Player(s) re-time their playout and recording start times so that frame-accurate dubbing still occurs – despite the delay added by the MediaPorts.

It is possible to “break” dubbing by setting up an IEEE 1394 dub between Players, one or more of which has a MediaPort attached. In such cases, the Players adjust their timing to take into account the MediaPort-induced delays, but as the actual connection is using a direct IEEE 1394 link, the recording will be off by several frames.

For example, for monitoring purposes, one might be tempted to attach a MediaPort to a direct IEEE 1394 dubbing Player or recorder. Unfortunately, doing so will break dubbing. Therefore, the following rules need to be observed:

- For direct IEEE 1394 dubs, none of the Players may have a MediaPort attached.
- For dubbing to/from a Player with a MediaPort, connect it using a baseband SDI connection between MediaPorts – not a direct IEEE 1394 link.

## Dubbing Clips

### To dub clips with Windows ClipTool:

1. Determine if you want to dub using IEEE 1394, or using physical I/O devices (for example, MediaPort to MediaPort). Please note:
  - If you elect to dub using IEEE 1394, the SystemManager will handle all connections, but format conversion is not allowed. An IEEE 1394 connection is required to dub between MediaDirectors.
  - If you elect to dub using physical I/O devices, all physical (BNC) connections are the user's responsibility – the SystemManager does not handle them. Format conversion *is* allowed in this configuration. As required, connect cables between the Source MediaPort's output and the Target MediaPort's input.
  - If you elect to use multiple targets, they must be on different active File Systems.
2. Pre-select Target Player(s) using the SystemManager:
  - a. Select the desired MediaDirector host, and navigate to the **Player List**.
  - b. Select (or create) the Target Player that you want to use. If the Target Player already exists, click the **Edit Hyperlink** to display the **Edit Player** page. If the Player is new, the **Edit Player** page will be automatically accessed when you enter the new Player name.
  - c. Assign the desired audio and video formats to the Target Player.
  - d. If you are performing dubbing using physical I/O devices, connect the tracks on the Target Player to the appropriate devices.

- e. If you are performing IEEE 1394 clip dubbing, ensure that the Player is disconnected from any MediaPorts.
  - f. For both types of clip dubbing, ensure that the Player is inactive.
  - g. Repeat this step to create additional targets – on the same MediaDirector (only if you elect to dub using physical I/O devices), or on a different MediaDirector for both types of clip dubbing.
3. Pre-select a Source Player using the SystemManager:
    - a. Select the desired MediaDirector host, and navigate to the **Player List**.
    - b. Select (or create) the Source Player that you want to use.
    - c. If the Source Player already exists, click the **Edit Hyperlink** to display the **Edit Player** page. If the Player is new, the **Edit Player** page will be automatically accessed when you enter the new Player name.
    - d. Assign the desired audio and video formats to the Source Player.
    - e. If you are performing dubbing using physical I/O devices, connect the tracks on the Source Player to the appropriate devices. Refer to *Menus* for player creation and editing instructions.
    - f. If you are performing IEEE 1394 clip dubbing, ensure that the Player is disconnected from any MediaPorts.
  4. From the Source Player's **Edit Player** page, you can now configure the Source-to-Target connection:
    - At the bottom of the Edit Player page, in the Target Player drop-down box, choose the target Player. The SystemManager lists all valid Players (of which it has knowledge) on all MediaDirectors within the Spectrum system.
    - Click **Connect using 1394** or **Connect using I/O Device** (depending upon the method by which you choose to dub). Repeat this step to connect additional targets. The Player List will reflect your source and target choices.



**NOTE:** When the Source-to-Target connection is successful, the name of the Target Player's MediaDirector appears in each track's list of attached devices.

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- On the **Player List**, note that the label “**(Source:#)**” appears after the Source Player’s status indicator, and label “**(Target)**” appears after the Target Player’s status indicator. The # indicates the number of Target Players connected.
5. With all connections complete, activate the Source Player. This action automatically activates all Target Players.  
Refer to *Activating and Deactivating Players* for instructions.
  6. On the Player List, click the **Open Hyperlink** to open ClipTool for the selected Source Player.
  7. Place one or more clips on the source timeline and trim the clips as required.



**IMPORTANT:** Long GOP IEEE 1394 clip dubbing can be performed, if it is done one clip at a time.

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8. On ClipTool’s **Menu Bar**, click **File > Dubbing**. Please note:
  - 9. If you preconfigured your Source and Target “gang” and launched ClipTool from the SystemManager, the Choose Recording MediaDirector/Player dialog does not appear. Please continue with step 9.
    - If the gang was *not* predefined or if you launched ClipTool from the desktop, the Choose Recording MediaDirector/Player dialog appears, asking you to select a Target Player.

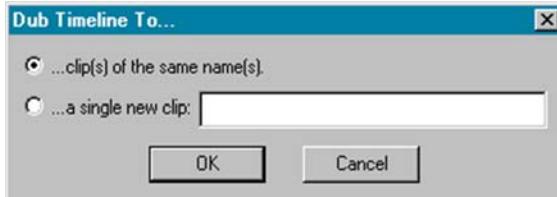
A sample Choose Recording MediaDirector/Player dialog is shown in *Figure 16-22*.



**Figure 16–22: Choose RECORDING MediaServer and Player Dialog**

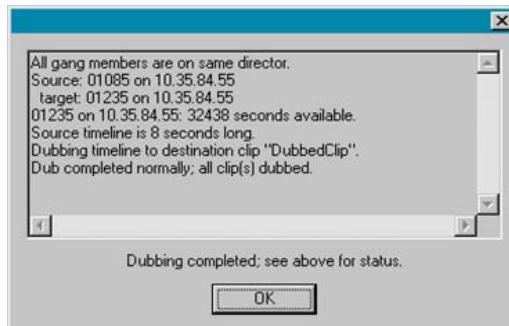
This dialog allows you to define a gang on the fly for ad-hoc dubbing. Select the desired Target Player (only one may be selected) and click **OK**.

10. The **Dub Timeline Selection** dialog (*Figure 16–23*) appears, asking that you choose what action to take on the Target Player(s).



**Figure 16–23: Dub Timeline Selection Dialog**

- Select **...clip(s) of the same name(s)** to record all source clips to clips of the same name on the Target Player(s). In this mode, source clips will be dubbed to the Target(s) one-for-one. This selection can only be used with Targets residing on another File System.
  - Additionally, the marked in-points and out-points will be preserved in the dubs. For example, if a source clip has been trimmed to frames 100-200, then the dubs will all start at frame 100 and end at frame 200.
  - Select **...a single new clip** to record the entire source timeline to a single target clip with a name you specify. Fill in the name of the desired target clip.
  - In this mode, the entire timeline is recorded to a new clip starting at frame 0. Even if you dub a single clip and specify its existing name as the “new” name, it will start at zero.
11. With your selection made, click **OK**. ClipTool now checks the pending dub operation. If no problems are found, the dub begins. If, however, potential problems are found, the **Dub Preprocessing** dialog appears, a sample of which is shown in *Figure 16–24*.

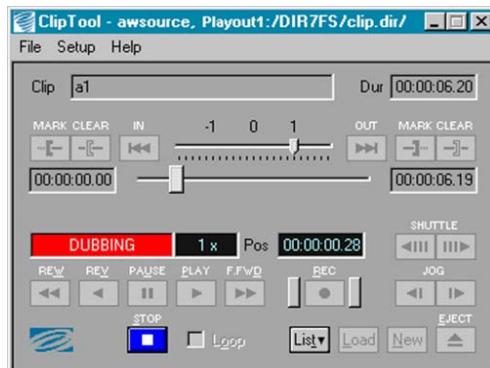


**Figure 16–24: Dub Preprocessing Dialog**

The dialog's scrolling window shows a comprehensive list of status checks, including sync status, the names of the gang members and any possible problems detected. The line of text below the list reports the most pressing problem.

- Click **Cancel** (or press **Enter** or **Esc**) to cancel the dub. **Cancel** is the default selection.
- Click **OK** to proceed with dubbing. ClipTool will also process any conflicts by ejecting source clips with conflicting names. It will then load the target timelines with appropriately named and sized clips in which to record.

When dubbing commences, the Source Player cues at the head of the timeline and the Target Players cue into record. All transport controls other than **Stop** are disabled, and the **Transport Status** readout flashes between the current state and “**DUBBING**” as displayed in [Figure 16–25](#).



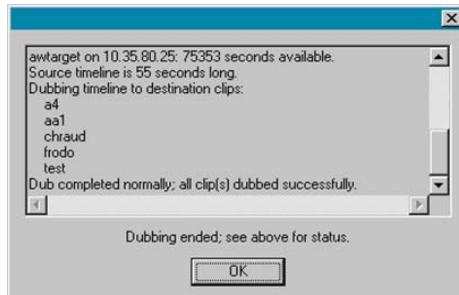
**Figure 16–25: Transport Status “DUBBING”**

Note the following points regarding the dub in progress:

- Use the **List** button to hide and show the clip list, but remember that all other controls (other than **Stop**) are unavailable.
- Press **Stop** to halt the dub. In this case, dubbing stops and the clip currently being recorded on the Target(s) will be incomplete.
- ClipTool monitors the dubbing process and halts on any of the following conditions:
  - The Source or Target Player fails to respond or reports an error.
  - A Target Player runs out of space.
  - The Source Player reports a status other than “**Cued for Play**” or “**Play**”.

- A Target Player reports a status other than “Cued for Record” or “Record”.
- The end of the playback timeline is reached (normal completion).
- Stop** is pressed.

When dubbing ends, the **Dub Information** dialog (*Figure 16–26*) appears with a summary of the operations performed and the reason that the dubbing ended.



**Figure 16–26: Dub Information Dialog**

12. Repeat the procedure from step 7 to dub additional clips.

## Part III: Omneon MediaGrid

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# Chapter 16

## Omneon MediaGrid Basic Configuration

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This chapter provides basic configuration procedures for Omneon MediaGrid. Choose from the following topics:

- [\*Gaining Secure Access to an Omneon MediaGrid\*](#)
- [\*About Omneon MediaGrid Authentication\*](#)
- [\*About Omneon MediaGrid Application Processing\*](#)
- [\*About Omneon MediaGrid Licenses\*](#)
- [\*Installing an Omneon MediaGrid License File on a Cluster\*](#)
- [\*About Clusters, Volumes, and Groups\*](#)
- [\*About Mixing ContentServers and Scheduled Balancing\*](#)
- [\*About Checkpoints and Scheduling Checkpoints\*](#)
- [\*Configuring an Omneon MediaGrid\*](#)
- [\*Viewing Omneon MediaGrid Clusters and Components\*](#)
- [\*Viewing Properties and Processes Across Omneon MediaGrid Components\*](#)
- [\*Powering Down an Omneon MediaGrid System\*](#)

Refer to the *Omneon MediaGrid Installation and Configuration Guide* for detailed instructions on installing an Omneon MediaGrid.



**NOTE:** Before commencing Omneon MediaGrid configuration, ensure that vDHCP is disabled on the SystemManager Platform. Refer to the *Harmonic SystemManager Installation Guide* for instructions.

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### Gaining Secure Access to an Omneon MediaGrid

Access to an Omneon MediaGrid is provided for three levels of users: Regular user, Omneon MediaGrid Administrator, and SystemManager Administrator. See [\*About Omneon MediaGrid Authentication\*](#) for information about permissions extended to each level of user.

#### To gain access to an Omneon MediaGrid:

1. From the **Configuration** tab, click the **Access Control** icon in the Omneon MediaGrid section of the left-hand column. The **Access Control Settings for Harmonic MediaGrid Devices** page appears.

The screenshot shows a web-based configuration interface titled "Access Control Settings for Harmonic MediaGrid Devices". At the top left is a small icon of a server or media device. Below the title, the section "Harmonic MediaGrid Authentication" is displayed. There are four input fields: "Username" (empty), "Password" (empty), "Confirm Password" (empty), and "Domain" (empty). A "Save Settings" button is located at the bottom left of the form area.

Figure 16–1: Access Control Settings for Harmonic MediaGrid

2. Enter information in the following fields to gain secure access.
  - For Regular user access, contact your IT department for information.
  - For Omneon MediaGrid Administrator level access use:
    - **Username:** mgadmin
    - **Password:** 1234
    - **Confirm Password:** 1234
    - **Domain:** (empty)
  - For SystemManager Administrator level access use:
    - **Username:** omneon
    - **Password:** usm
    - **Confirm Password:** usm
    - **Domain:** (empty)
3. Click **Save Settings** to save changes. The SystemManager now provides access to the Omneon MediaGrid according to the security access level assigned to the user.

## About Omneon MediaGrid Authentication

Security on an Omneon MediaGrid is provided at three levels:

- **Using Windows Domain Controller (WDC):** Connecting to a WDC provides a user's security token and a list of group memberships. Thus, a WDC is a requirement for facilities operating an Omneon MediaGrid. **Regular users** are permitted this level of access.

For more information about WDC, a good general starting point is the Windows Server Cookbook: <http://www.oreilly.com/catalog/windowsvrckbk/index.html>



**NOTE:** Although Harmonic neither recommends nor supports this, customers with expert level skills and knowledge can connect to a Samba-emulated WDC. For more information about a Samba-emulated WDC, go to: <http://www-128.ibm.com/developerworks/linux/library/l-samba-tng.html>

- **Using the ContentManager application:** ContentManager allows you to set user and group level security for various Omneon MediaGrid files and directories through Access Control Lists (ACLs). Once an ACL is created, you can customize the security preferences for each individual Access Control Entry (ACE). In summary, **Omneon MediaGrid Administrators** are

permitted to configure the Omneon MediaGrid, whereas Regular users are not. Refer to the *Omneon ContentManager User's Guide* for additional information.

- **Using Omneon MediaGrid with MAS:** The Media Application Server (MAS) provides unified content management capabilities across various storage systems, as well as a common view of content stored across multiple file systems. **SystemManager Administrators** are permitted to configure Omneon MediaGrid directories using a MAS system. Refer to the *Media Application Server User Guide* for additional information.



**NOTE:** Do not log in as a SystemManager administrator if you plan to configure ContentManager settings.

## About Omneon MediaGrid Application Processing

Omneon MediaGrid Application Processing (MGAP) refers to a set of functions that allocates, loads and manages grid applications licensed to run on compute nodes.



**NOTE:** You must have Administrator privileges to use these functions.

### Application

A grid application is a licensed entity developed by Harmonic or a third-party vendor. It consists of two parts: the application controller and the application process.

#### Application Controller

The application controller is a client program that hosts the grid environment on cluster servers. These cluster servers are referred to as nodes, although they may also simultaneously assume the personality of a ContentServer actively supporting the file system.



**NOTE:** In the Omneon MediaGrid interface, a node is also referred to as a ContentServer.

#### Application Process

An application process is a Linux process group that executes directly on a node in a grid. The application process is started when the application controller initiates a load request for that node. Each load image may be the same for all nodes, or unique to a specific node, depending on the structure of the application.

#### Grid

A grid is a set of nodes in which application processes execute. The application controller allocates one or more grids. It may also drop and add node memberships once the grid has been allocated. A node can belong to only one grid at a time. Grids access is not shared among multiple application controllers.

## About Omneon MediaGrid Licenses

MGAP functionality is enabled through compute node licenses and application licenses.

### Compute Node License

At least one compute node license must be created and installed to enable client grid access. This license restricts grid usage by limiting the maximum number of grids allocated at any time, as well as limiting each grid to a maximum number of nodes. Additional compute node licenses must be installed if the maximum number of nodes in use is exceeded.

### Application License

In addition to the compute node license, one application license must be installed for each application running on a grid. If the application comes from a third-party vendor, the license must be supplied to the vendor.

### Omneon MediaGrid License File

The compute node license(s) and application license(s) are included in Omneon MediaGrid license files. After the licenses have been purchased, the license file(s) ending in .omlic, are sent by e-mail to customers. License file(s) should be placed in the D:\Licenses directory of the SystemManager Platform. Refer to **Obtaining and Installing a SystemManager License File** in the *Harmonic SystemManager Installation Guide* for step by step instructions.

Once Omneon MediaGrid license file(s) are available in the D:\License directory on the SystemManager Platform, refer to [Installing an Omneon MediaGrid License File on a Cluster](#) for additional installation instructions.

## Installing an Omneon MediaGrid License File on a Cluster

Before commencing this procedure, review [About Omneon MediaGrid Application Processing](#) for background information.



**NOTE:** You must have Administrator privileges to perform this function.

---

#### To install a license file on a Cluster to enable application processing:

1. Ensure that an Omneon MediaGrid Application Processing (MGAP) license file is available for use in the D:\Licenses directory of the SystemManager Platform that controls the Omneon MediaGrid. Contact Technical Support if the license file is not in this directory.
2. From the **Configuration** tab, click the **Install License** icon in the left-hand column to access the **Install License** page.
3. Identify the required license and select an installation location from the **Select Cluster** list.
4. Select the appropriate check box.
5. Click **Install**.

The license file is installed on a ContentDirector in the selected cluster.

## About Clusters, Volumes, and Groups

### For ContentServer 3000 Series

The ContentServer 3000 and ContentStore 3160 use a RAID architecture rather than replication. Therefore, there is no advantage to having multiple groups. When setting up a typical Omneon MediaGrid system with the ContentServer 3000, there will be only be one cluster, one volume, and one group, all of which are generated automatically by the configuration assistant.

Keep in mind the meaning of these concepts:

- A Cluster includes a Volume and its associated ContentDirectors, ContentServers and ContentStores within an Omneon MediaGrid.
- A Volume includes one Group and its associated ContentServers and ContentStores in an Omneon MediaGrid.
- A Group is a collection of one or more ContentServers and ContentStores in an Omneon MediaGrid.

For information on configuring the RAID sets for your ContentServer 3000 series and ContentStore, refer to [Omneon MediaGrid RAID Configuration and Maintenance](#).

### For ContentServer 1000 and 2000 Series

Users may segment an Omneon MediaGrid volume into one or more groups of ContentServers for the purpose of influencing where replicated slices are stored. When more than one group is configured, the replication scheme of the Omneon MediaGrid ensures that different slices are replicated in different groups. The most common use of this feature is to ensure that if one group fails (for example, because of power strip failure or damage to the building), then at least one copy of this content is still available in other Groups of ContentServers that are perhaps powered by different sources or located in different buildings.

Note the following:

- A group can belong to, at most, one volume.
- Avoid making more than one group per rack in a cluster unless needed. There are some cases where you may be tempted to use multiple groups:
  - Testing/developing/demonstrating groups: Harmonic recommends that you do not leave these groups in actual production, unless for benchmarking purposes. Performance and recovery characteristics with these systems will be sub-optimal.
  - Power supply isolation of ContentServers: If ContentServers are on separate power strips, then create a group for each power strip.
  - Network isolation of ContentServers. If ContentServers are on separate network switches, then create a group for each network switch.
- The suggested minimum number of ContentServers in a group is 12. Less than 12 will make it more likely that groups get unbalanced and hotspots develop.
- The suggested maximum number of groups is less than nine. Once you have more than two racks of ContentServers, Harmonic suggests limiting a group to a whole rack, instead of multiple groups within a rack.
- The number of groups should be equal to or slightly higher than the expected replication factor. More groups do not help. Pick the desired replication factor, then set up a grouping arrangement that best supports that replication factor.

Refer to [Documentation Terms and Abbreviations](#) for definitions of clusters, volumes, groups, and ContentServers as they relate to an Omneon MediaGrid.

## About Mixing ContentServers and Scheduled Balancing



**NOTE:** At this time, the ContentServer 3000 and ContentStore 3160 series cannot be mixed with ContentServer 1000 or 2000 series in the same Omneon MediaGrid system.

Clients can utilize the full bandwidth and storage provided by ContentServer 1000 series and ContentServer 2000 series in a mixed-server configuration (ContentServers 1042 and ContentServers 2122/2124 in the same Omneon MediaGrid system). In order for a mixed server configuration to function properly, you must make sure the system is balanced on a regular basis by using the Balancer feature included in this version of SystemManager. Enabling and configuring scheduled balancing for a cluster ensures that all ContentServers have disk space balanced across the cluster. For information on using the Balancer, refer to [Enabling and Configuring Scheduled Balancing](#).

## About Checkpoints and Scheduling Checkpoints

Checkpointing allows you to save a copy of all File System metadata stored in a ContentDirector. Data is saved to a single file—the Checkpoint file and stored on a ContentServer. Each ContentServer holds a single Checkpoint file; each new Checkpoint goes to a different ContentServer. If a disaster destroys all ContentDirectors, File System metadata can be retrieved from the Checkpoint file and then restored to a new ContentDirector.

Checkpoint scheduling allows you to periodically create Checkpoint files. A ContentServer stores a single Checkpoint file. Each time a Checkpoint is created, a different ContentServer is used to store the Checkpoint file. This allows several Checkpoints to exist on an Omneon MediaGrid, so that the File System data is redundantly protected.

Checkpoints can be immediate (on demand) or scheduled at intervals. You can set the interval from 1 to 12 hours, 16 or 20 hours, or from 1-15 days. Checkpoint intervals can be configured to occur at any hour of the day, and on any day of the week. Refer to [Enabling and Configuring Checkpoint Schedules](#) for step by step instructions on how to configure a schedule.

Harmonic makes the following recommendations for Checkpoints and Checkpoint Scheduling:

- All ContentDirectors should have Checkpoints enabled and a schedule configured.
- Schedule Checkpoints to occur at least every 24 hours.
- All ContentDirectors in a cluster should have identical Checkpoint intervals but different starting times. For example, if an Omneon MediaGrid has three ContentDirectors, then ContentDirector A could have a schedule start time of Monday at midnight, ContentDirector B would have Tuesday at midnight, and ContentDirector C would have Wednesday at midnight. The Checkpoint interval should then be set to 72 hours on each ContentDirector. This would ensure a Checkpoint occurred every 24 hours, rotating among the ContentDirectors.
- Before configuring checkpoints, Harmonic recommends that you set the time zone on each ContentDirector. Refer to “Setting ContentDirector Timezones” in the *Omneon MediaGrid Installation and Configuration Guide* for step by step instructions.



**NOTE:** Contact Technical Support if you wish to access information in the Checkpoint file.

The **Events** section on a **ContentDirector Properties** page provides information about the success or failure of the last attempted checkpoint operation. Refer to [Viewing and Clearing Alarms and Events for Omneon MediaGrid Components](#) for instructions that also pertain to Checkpointing.

## Configuring an Omneon MediaGrid

Most Omneon MediaGrid configuration steps are performed when you run the configuration assistant. For information on running the configuration assistant, refer to “System Configuration” in the *Omneon MediaGrid Installation and Configuration Guide*.

If you do not complete the configuration assistant, you must manually initialize a cluster and establish volumes, groups, and File Systems within the cluster. Refer to “System Configuration” in the *Omneon MediaGrid Installation and Configuration Guide* for detailed instructions. For Omneon MediaGrid RAID systems, you must also configure RAID sets. Refer to [About Clusters, Volumes, and Groups](#) for definitions of clusters, volumes, and groups as they relate to an Omneon MediaGrid as well as additional notes and recommendations for setting up collections in an Omneon MediaGrid. For Omneon MediaGrid RAID systems (ContentServer 3000 series and ContentStores), refer to [Omneon MediaGrid RAID Configuration and Maintenance](#) for all RAID configuration steps.

With a cluster initialized, additional configuration of an Omneon MediaGrid may consist of the following steps:

- [Creating or Deleting Clusters](#)
- [Creating or Deleting a Volume](#)
- [Adding Servers to or Removing Servers from a Group](#)
- [Adding or Removing Groups from a Volume](#)
- [Creating or Deleting File Systems from a Volume](#)
- [Setting Replication Factors for File Systems](#)
- [Establishing Communication with a Spectrum System](#)
- [About ContentServer and Cluster Bandwidth Measurements](#)



**NOTE:** To perform the configuration tasks mentioned above for an Omneon MediaGrid, you will need Admin level access. Refer to [Gaining Secure Access to an Omneon MediaGrid](#) for additional information.

## Creating or Deleting Clusters

Refer to “Cluster Initialization and Key Installation” and “Volume and Group File System Creation” in the *Omneon MediaGrid Installation and Configuration Guide* for detailed instructions.



**NOTE:** You must have Administrator privileges to perform these functions.

## Creating or Deleting a Volume



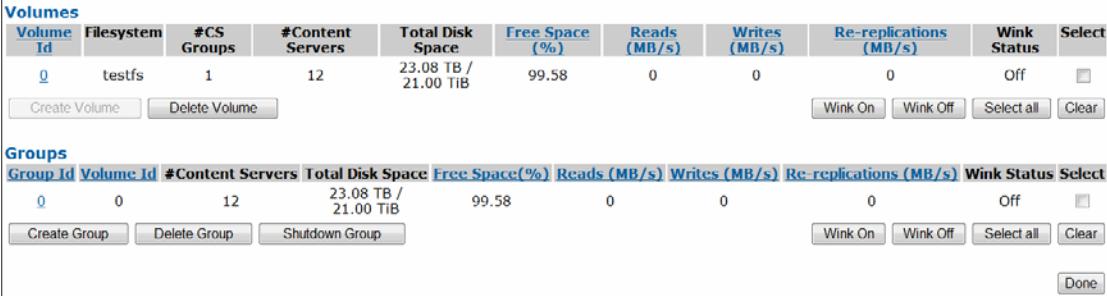
**NOTE:** When setting up an Omneon MediaGrid system with the ContentServer 3000, there can only be one cluster, one volume, and one group, all of which are generated automatically by the configuration assistant.



**NOTE:** You must have Administrator privileges to perform these functions.

### To create or delete a volume:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** sections, click the **Name** hyperlink for the cluster with the required **Volume**. The **Cluster Properties** page appears. Scroll to the **Volumes** section, as shown in [Figure 16-2](#).



The screenshot shows the 'Volumes' section of the Cluster Properties page. It displays a table with one row for a volume named 'testfs'. The table columns are: Volume Id, Filesystem, #CS Groups, #Content Servers, Total Disk Space, Free Space (%), Reads (MB/s), Writes (MB/s), Re-replications (MB/s), Wink Status, and Select. Below the table are buttons for 'Create Volume', 'Delete Volume', 'Wink On', 'Wink Off', 'Select all', and 'Clear'. A 'Done' button is located at the bottom right.

Volumes	Volume Id	Filesystem	#CS Groups	#Content Servers	Total Disk Space	Free Space (%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	Wink Status	Select
0	testfs	1	12	23.08 TB / 21.00 TiB	99.58	0	0	0	0	Off	<input type="checkbox"/>

Groups	Group Id	Volume Id	#Content Servers	Total Disk Space	Free Space(%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	Wink Status	Select
0	0	12	23.08 TB / 21.00 TiB	99.58	0	0	0	0	Off	<input type="checkbox"/>

**Figure 16–2: Cluster Properties—Volumes Section**

3. In the **Volumes** section of the page, proceed as follows:

- **To create a Volume:** Click **Create Volume**. A dialog box appears asking you to confirm the creation. Click **OK**. A new volume is added to the list of volumes.
- **To delete a Volume:** Select the volume to be deleted and click **Delete Volume**. A dialog box appears asking you to confirm the deletion. Click **OK**. The volume is removed from the list of volumes.



**NOTE:** Only one volume is supported on the Omneon MediaGrid.

4. Click **Done**.

## Creating or Deleting Groups



**NOTE:** When setting up an Omneon MediaGrid system with the ContentServer 3000, there can only be one cluster, one volume, and one group, all of which are generated automatically by the configuration assistant.

The number of groups should be equal to or slightly higher than the expected replication factor. Once the desired replication factor is chosen, set up a grouping arrangement that best supports that replication factor.



**NOTE:** You must have Administrator privileges to perform these functions.

### To create or delete groups:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** sections, click the **Name** hyperlink for the cluster with the required volume. The **Cluster Properties** page appears. Scroll to the **Groups** section as shown in *Figure 16–3*.

The screenshot shows the 'Groups' section of the Cluster Properties page. It displays a table with columns: Group Id, Volume Id, #Content Servers, Total Disk Space, Free Space(%), Reads (MB/s), Writes (MB/s), Re-replications (MB/s), Wink Status, and Select. There is one entry: Group Id 0, Volume Id 0, #Content Servers 12, Total Disk Space 23.08 TB / 21.00 TIB, Free Space(%) 99.58, Reads (MB/s) 0, Writes (MB/s) 0, Re-replications (MB/s) 0, Wink Status Off, and Select checked. Below the table are buttons for Create Group, Delete Group, Shutdown Group, Wink On, Wink Off, Select all, and Clear. A 'Done' button is located at the bottom right.

Groups										
Group Id	Volume Id	#Content Servers	Total Disk Space	Free Space(%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	Wink Status	Select	
0	0	12	23.08 TB / 21.00 TIB	99.58	0	0	0	Off	<input checked="" type="checkbox"/>	

Figure 16–3: Cluster Properties—Groups Section

- In the **Groups** section of the page, proceed as follows:
  - To create a Group:** Click **Create Group**. A dialog box appears asking you to confirm the creation. Click **OK**. A new **Group** is added to the list of **Groups**.
  - To delete a Group:** Select the **Group** to be deleted and click **Delete Group**. A dialog box appears asking you to confirm the deletion. Click **OK**. The **Group** is removed from the list of **Groups**.
- Click **Done**.

## Adding Servers to or Removing Servers from a Group



**NOTE:** When setting up an Omneon MediaGrid system with the ContentServer 3000, there can only be one cluster, one volume, and one group, all of which are generated automatically by the configuration assistant.

Follow these guidelines when adding ContentServers to a group:

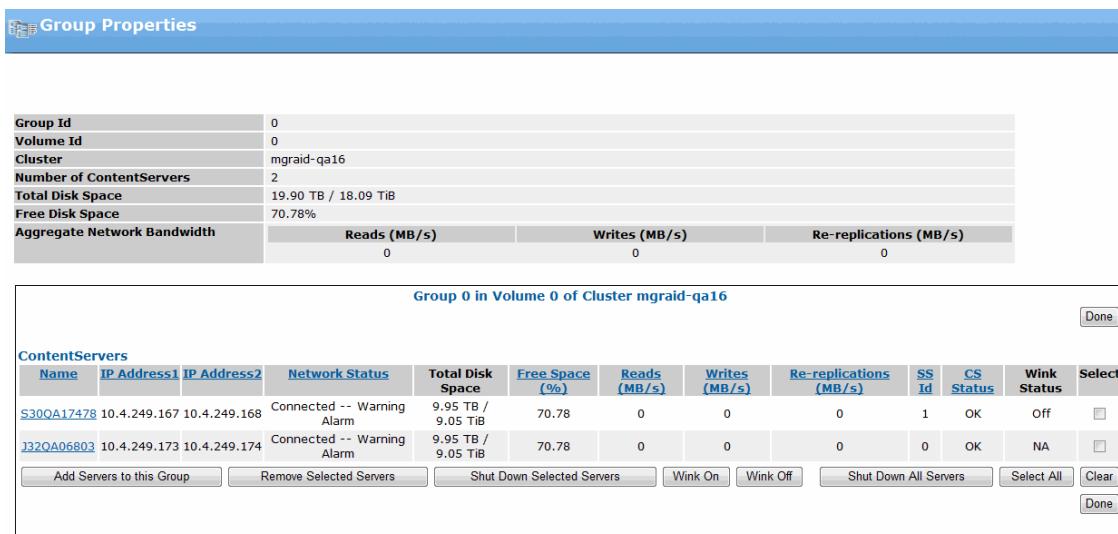
- The recommended configuration is 12 ContentServers per group. Note that the default replication factor is three; the replication factor can be changed to best support the number of ContentServers. Refer to [Setting Replication Factors for File Systems](#) to change this value.
- For maximum performance, do not use less than 10 ContentServers in a group. This provides a sufficient pool of ContentServers for slice storage.



**NOTE:** You must have Administrator privileges to perform these functions.

### To add or remove ContentServers to/from a Group:

- Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
- In the **Clusters** sections, click the **Name** hyperlink for the cluster with the required **Group**. The **Cluster Properties** page appears. Scroll down the page to display the **Group** section.
- Click the required **Group ID** to display the **Group Properties** page as shown in [Figure 16–4](#).



**Figure 16–4: Group Properties**

4. To add a Server to the **Group**, click **Add Server(s) to this Group**. The **Unattached ContentServers** page appears where you select which Server to add. Click **Confirm Add**. A dialog box appears which prompts you to confirm the addition. Click **OK**.
5. To remove a Server from the **Group**, select the Server and click **Remove Selected Servers**. A dialog box appears prompting you to confirm the delete. Click **OK**.
6. Click **Done**.

The Server has been added to or deleted from the group as specified. Deleted Servers can be reused with another group (or the same group) within an Omneon MediaGrid at a later time.

## About ContentBridge Discovery and Cluster Association

High Bandwidth ContentBridges will not be added to SystemManager automatically if they are not in the same IP network as the SystemManager or ContentDirectors being monitored. In most cases, the Connect Device feature must be used to add such devices. For more information refer to [Connecting a Device from a Different IP Network](#).

Note that ContentBridges and High Bandwidth ContentBridges will not be displayed in a cluster if they are not in the same IP network as one of the cluster's ContentDirectors. Also, their cluster value will be shown as "unknown" in such cases. The ContentBridge cluster association is for convenience only and does not affect operation.

## Adding or Removing Groups from a Volume



**NOTE:** When setting up an Omneon MediaGrid system with the ContentServer 3000, there can only be one cluster, one volume, and one group, all of which are generated automatically by the configuration assistant.



**NOTE:** You must have Administrator privileges to perform these functions.

### To add or remove an existing Group to/from a Volume:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.

2. In the **Clusters** sections, click the **Name** hyperlink for the cluster with the required volume. The **Cluster Properties** page appears. Scroll down the page to display the **Volume** section.
3. Click the required **Volume** to display the **Volume Properties** page, as shown in [Figure 16–5](#).

The screenshot shows the 'Volume Properties' page. At the top, there's a table with the following data:

Volume Id	0		
Cluster	cld-pf2		
Number of Groups	1		
Number of ContentServers	12		
FileSystem	Name: testfs Owner only access Open to all users		
<input type="radio"/> To enable client access to the filesystem, edit the ContentBridge config file on the Cluster page after creating the filesystem. Reboot the ContentBridge for the changes to take effect.			
Create FileSystem    Change Permissions    Delete FileSystem			
Default FileSystem Replication Factor	1		
Total Disk Space	23.08 TB / 21.00 TiB		
Free Disk Space	99.58%		
Aggregate Network Bandwidth	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)
	0	0	0

Below this is a dialog box titled 'Volume 0 in Cluster cld-pf2' with the following content:

Volume 0 in Cluster cld-pf2									
Filesystem		Total Disk Space		Free Space(%)		Current Default Replication Factor			
Name	Total Disk Space	Total Disk Space	Free Space(%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	Wink Status	Select	
testfs	23.08 TB / 21.00 TiB	23.08 TB / 21.00 TiB	99.58	0	0	0	Off	<input type="checkbox"/>	
Groups	Group Id	#Content Servers	Total Disk Space	Free Space(%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	Wink Status	Select
	0	12	23.08 TB / 21.00 TiB	99.58	0	0	0	Off	<input type="checkbox"/>
Create Group    Delete Group    Add Group to Volume...    Remove Group from Volume									<input type="button" value="Wink On"/> <input type="button" value="Wink Off"/> <input type="button" value="Select all"/> <input type="button" value="Clear"/>

**Figure 16–5: Adding or Removing Groups**

4. To add a group to the volume, click **Add Group to Volume**. The **Unattached Groups** page appears, which allows you to select which group to add. Click **Confirm Add**. A dialog box appears, which prompts you to confirm the addition. Click **OK**.
5. To remove a group from the volume, select the group and click **Remove Group from Volume**. A dialog box appears, which prompts you to confirm the delete. Click **OK**.
6. Click **Done**.

The **Group** has been added or deleted from the **Volume** as specified. A deleted group can be added to another (or the same) volume at a later time.

## Creating or Deleting File Systems from a Volume



**NOTE:** You must have Administrator privileges to perform these functions.

### To create or delete File Systems:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** sections, click the **Name** hyperlink for the cluster with the required **Volume**. The **Cluster Properties** page appears.
3. Scroll down the page to the **Volumes** section and click the required **Volume ID** to access the **Volume Properties** page (see [Figure 16–5](#)).
4. **To create a File System:** In the **File System** field at the top of the page, enter a File System name and click **Create File System**. Refer to [About Naming Files and System Elements](#) for rules to follow when naming a File System.



**NOTE:** Only one File System can be associated with a Volume; if one File System is already created for a volume the Create File System button will be grayed out.

5. **To delete a File System:** In the **File System** field, click **Delete File System**.
6. A dialog box appears to confirm the deletion. Click **OK**.
7. Click **Done** to complete the task. The **File System** has been created or deleted from the **Volume** as specified.

## Setting or Changing File System Permissions



**NOTE:** You must have Administrator privileges to perform these functions.

### To set or change File System permissions:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** sections, click the **Name** hyperlink for the cluster with the required **Volume**. The **Cluster Properties** page appears.
3. Scroll down the page to the **Volumes** section and click the required **Volume ID** to access the **Volume Properties** page (see *Figure 16-5*).
4. In the **File System** field, select from:
  - **Owner only access:** Select to limit access to the person who has logged in. This is the default permission.
  - **Open to all users:** Select to provide File System access to all users.
5. Click **Change Permissions** to save the change.

## Setting Replication Factors for File Systems



**NOTE:** You must have Administrator privileges to perform these functions.

### To set replication factors for File Systems:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** sections, click the **Name** hyperlink for the cluster with the required **Volume** and associated **File System**. The **Cluster Properties** page appears.
3. Scroll down the page to the **Volumes** section and click the appropriate **Volume ID** to access the **Volume Properties** page.
4. In the **Default File System Replication Factor** field, enter a number between 2 and 105. Refer to *About File System Replication Factors* for recommendations about replication factors. The default replication factor is 3.
5. Click **Change Default Replication Factor** to set the change.

## About File System Replication Factors

For Omneon MediaGrid systems with the ContentServer 1000 and 2000 series, Harmonic recommends that you keep the replication factor for your system set to 3 (the default setting) or, at minimum, 2.



**IMPORTANT:** Note that setting the replication factor to 1 will lead to data loss in the case of system or disk failure.

## Establishing Communication with a Spectrum System

Refer to [Connecting to an Omneon MediaGrid \(for MediaDirectors 2100, 2101, 2102 and 2102B\)](#) or [Connecting to an Omneon MediaGrid from the MediaDirector 2252/2251, 2202/2201, MediaCenter, and MediaDeck 7000](#) for information.

## About ContentServer and Cluster Bandwidth Measurements

SystemManager provides bandwidth measurement statistics on a drive read, write and re-replication basis for each ContentServer. Aggregate statistics are also available for each cluster. For ContentServers, the drive read, write and re-replication measurements are summed over all the ContentServers of the cluster and are shown as the **Bandwidth Utilization** on the **Cluster Properties** page (see [Figure 16–6](#)).

Name	cld-pf2						
#ContentDirectors	2						
#Volumes	1						
#Groups	1						
#ContentServers	12						
Total Disk Space	23.00 TB / 21.00 TiB						
Free Space	99.58%						
Bandwidth Utilization	<table><thead><tr><th>Reads (MB/s)</th><th>Writes (MB/s)</th><th>Re-replications (MB/s)</th></tr></thead><tbody><tr><td>0</td><td>0</td><td>0</td></tr></tbody></table>	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	0	0	0
Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)					
0	0	0					

**Figure 16–6: Cluster Properties—Bandwidth Utilization**

The aggregate total is compared to the potential available bandwidth and calculated as a percentage, which is shown as the **Bandwidth Utilization** (Average per ContentServer) on the **Cluster Properties** page. This percentage is then checked against the SystemManager alarm levels. The alarm levels can be configured from **Diagnostics** tab, using the **Edit Thresholds** page. For instructions, refer to [Editing Alarm Thresholds](#).

The default alarm levels are presented as follows:

- An **ERROR** (orange) alarm is raised if the value moves into the (80...90) range.
- A **CRITICAL** (red) alarm is raised if the value moves into the (90...100) range.
- An **INFO** (blue) alarm is raised if the value moves into the (0...80) range.

No alarm is raised if the value is in the same range as it was when this measure was last checked.



**NOTE:** ContentServers unresponsive to SystemManager queries for the read, write and re-replication counters are omitted from the calculation.

## Viewing Omneon MediaGrid Clusters and Components

### To view Omneon MediaGrid Clusters and Components:

1. Click the **Configuration Tab** at the top of the SystemManager page.
2. Click the **Servers & Switches** icon in the left-hand column to access the **Servers & Switches** page, as partially shown in [Figure 16–7](#).

The screenshot shows the 'Servers & Switches' section of the Harmonic MediaGrid interface. It is divided into three main sections:

- Clusters:** Displays information for a single cluster named 'orqaat'. The table includes columns for Name, #Volumes, #Groups, #Filesystems, Total Disk Space (23.81 TB / 21.66 TiB), Free Space (%)(61.63), Wink Status (Off), and buttons for Wink On, Wink Off, Select all, and Clear.
- ContentDirectors:** Displays two servers: 'orqaat-1' and 'orqaat-2'. Each server has columns for Name, IP Address, Network Status (Connected), AD Connection Status (Down), System Up Time (Unsupported), Total Disk Space (23.81 TB / 21.66 TiB), Free Space (%)(61.63), Cluster (orqaat), System Management (System Management), Wink Status (Off), and buttons for Wink On, Wink Off, Select all, and Clear.
- ContentServers/ContentStores:** Displays one ContentServer named 'S30RN01055'. The table includes columns for Name, IP Address, Network Status (Connected), System Up Time (75 days, 2:48:14.94), Total Disk Space (23.81 TB / 21.66 TiB), Free Space (%)(61.63), Reads (MB/s)(0), Writes (MB/s)(0), Re-replications (MB/s)(0), Cluster (orqaat), Volume Group, SSID (0, 0, 0), CS Status (OK), Wink Status (Off), and buttons for Wink On, Wink Off, Select all, and Clear.

Figure 16–7: Omneon MediaGrid—Servers & Switches

In the **Clusters** section shown below, you can view the following for each cluster created in the system:

- **Name (hyperlink):** Displays the name assigned to the cluster. Click on the hyperlink to access the Cluster Properties page.
- **#Volumes:** Displays the number of volumes which make up the cluster.
- **#Groups:** Displays the number of groups which make up the cluster.
- **#File Systems:** Displays the number of File Systems in the cluster.
- **Total Disk Space:** Displays the total disk space available across all ContentServers in a cluster.
- **Free Space(%):** Displays the percentage of free disk space across all ContentServers in a cluster.
- **Wink Status:** Shows whether the Wink function is enabled on the unit. When Wink is On, front and back panel LEDs flash allowing you to quickly identify a cluster in a rack. Click the Wink buttons at the end of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select the cluster.
- **Wink on (button):** Click to change the wink status of all the selected clusters to On.
- **Wink off (button):** Click to change the wink status of all the selected clusters to Off.
- **Select all (button):** Click to select all the clusters.
- **Clear (button):** Click to deselect all the clusters.

In the **ContentDirectors** section, you can view the following items for each ContentDirector found in the system:

- **Name (hyperlink):** Displays the name assigned to the Server. Click on the hyperlink to access the unit's Properties page.
- **IP Address:** Displays one of the Server's IP address.

- **IP Address 2:** Displays one of the Server's IP address.
- **Network Status:** Displays the unit's current network status, authentication status, and security access level, including "Connected," "Not Responding," "Error," "Deleted," "Starting Upgrade"; "Authenticated", "Not Authenticated"; "Administrator".
- **AD Connection Status:** Displays the status of the Active Directory connection, which may be "Up," "Down," or "N/A." Note that "N/A" means that either the cluster is not reporting the AD connection status or that the cluster is not using AD for authentication.
- **System Up Time:** Displays the time the unit has been "up and running" in days, hours, minutes, seconds, and fractions of seconds. Thus, 20:16:21:52:10 means 20 days, 16 hours, 21 minutes, and 52.10 seconds.
- **Total Disk Space:** Displays the total disk space available on the ContentDirector.



**NOTE:** The value in this field reflects cluster values. Each of the ContentDirectors in a cluster reports the same value for the cluster.

- **Free Space(%):** Displays the percentage of free disk space on the on the ContentDirector.



**NOTE:** The value in this field reflects cluster values. Each of the ContentDirectors in a cluster reports the same value for the cluster.

- **Cluster:** Displays the cluster name to which the ContentDirector is assigned.
- **System Management:** Provides a link to the SystemManagement (Dell OpenManage) page for the ContentDirector.
- **Wink Status:** Shows whether the Wink function is enabled on the unit. When Wink is On, front and back panel LEDs flash allowing you to quickly identify a cluster in a rack. Click the Wink buttons at the end of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select the ContentDirector.
- **Wink on (button):** Click to change the wink status of all the selected ContentDirectors to On.
- **Wink off (button):** Click to change the wink status of all the selected ContentDirectors to Off.
- **Select all (button):** Click to select all the ContentDirectors.
- **Clear (button):** Click to deselect all the ContentDirectors.

In the **ContentServers/ContentStores** section, you can view the following items for each ContentServer or ContentStore found in the system:

- **Name (hyperlink):** Displays the name assigned to the device. Note that for the ContentServer 3000 series, ContentServer names begin with S and ContentStore names begin with J. Click on the hyperlink to access the Properties page for each device.
- **IP Address:** Displays one of the Server's IP address.
- **IP Address 2:** Displays one of the Server's IP address.
- **Network Status:** Displays the Server's current network status, such as "Connected," "Not Responding," "Error," "Deleted," "Starting Upgrade" etc.
- **System Up Time:** Displays the time the unit has been "up and running" in days, hours, minutes, seconds, and fractions of seconds.
- **Total Disk Space:** Displays the total raw storage capacity of each server.

- **Free Space(%)**: Displays the percentage of free disk space on the ContentServer.
- **Reads (MB/s)**: Displays bandwidth usage in megabytes per second for drive “read” requests sent to the ContentServer.
- **Writes (MB/s)**: Displays bandwidth usage in megabytes per second for drive “write” requests received by the ContentServer.
- **Re-replications (MB/s)**: Displays bandwidth usage in megabytes per second for re-replication requests received by the ContentServer. For more information, refer to *About Re-replication (for ContentServer 1000 and 2000 Series only)*.
- **Cluster**: Displays the cluster name to which the ContentServer is assigned.
- **Volume/Group/CS ID**: Displays the volume name, to which the ContentServer is assigned; the group name to which the ContentServer is assigned; and a numeric identifier for the ContentServer within the cluster.
- **CS Status**: Displays the Server’s current status within the cluster, including “**No Cluster**,” “**Initializing**,” “**OK**,” “**Degraded**,” and, “**Storage Failure**”.
- **Wink Status**: Shows whether the Wink function is enabled on the unit. When Wink is On, front and back panel LEDs flash allowing you to quickly identify a unit in a rack. Click the Wink buttons at the end of the section to turn Wink On/Off.
- **Select**: Click the **Select** check box to select the ContentServer.
- **Wink on (button)**: Click to change the wink status of all the selected ContentServers to On.
- **Wink off (button)**: Click to change the wink status of all the selected ContentServers to Off.
- **Select all (button)**: Click to select all the ContentServers.
- **Clear (button)**: Click to deselect all the ContentServers.

In the **ContentBridges** sections (*Figure 16–8*), you can view the following items for each ContentBridge found in the system.

ContentBridges								
Name	DNS Name	IP Address	IP Address 2	Status	System Up Time	Cluster	Wink Status	Select
<a href="#">CLB01139</a>	CLB01139	10.30.24.190	10.30.25.192	Connected -- Error Alarm	0:23:57.08	mds8	On	<input type="checkbox"/>
<a href="#">CLB01003</a>	CLB01003	10.30.24.191	10.30.25.191	Connected -- Error Alarm	0:23:40.81	mds8	On	<input type="checkbox"/>

Network Switches				
IP Address	Network Status	System Up Time	Model	Switch Management
<a href="#">10.30.24.1</a>	Connected	182 days, 1:40:17.62	CNS-5412	<a href="#">Switch Management</a>
<a href="#">10.30.25.1</a>	Connected	182 days, 1:40:13.84	CNS-5412	<a href="#">Switch Management</a>
<a href="#">10.30.24.6</a>	Connected	105 days, 13:17:32.60	CNS-1001-CXF	<a href="#">Switch Management</a>
<a href="#">10.30.24.7</a>	Connected	44 days, 20:39:04.20	CNS-1001-CXF	<a href="#">Switch Management</a>
<a href="#">10.30.25.6</a>	Connected	105 days, 13:11:04.60	CNS-1001-CXF	<a href="#">Switch Management</a>
<a href="#">10.30.25.7</a>	Connected	47 days, 20:14:50.71	CNS-1001-CXF	<a href="#">Switch Management</a>

**Figure 16–8: ContentBridges / Network Switches Sections**

- **Name (hyperlink)**: Displays the name assigned to the unit. Click on the hyperlink to access the Content Bridge’s Properties page.
- **DNS Name**: The DNS name of the ContentBridge.
- **IP Address**: Displays one of the Server’s IP address.

- **IP Address 2:** Displays one of the Server's IP address.
- **Status:** Displays the unit's current network status, such as "Connected," "Not Responding," "Error," "Deleted," "Starting Upgrade" etc.
- **System Up Time:** Displays the time the unit has been "up and running" in days, hours, minutes, seconds, and fractions of seconds. Thus, 20:16:21:52:10 means 20 days, 16 hours, 21 minutes, and 52.10 seconds.
- **Config (High Bandwidth ContentBridge only):** Access the ContentBridge Configuration File. Refer to [Editing the High Bandwidth ContentBridge Configuration File](#) for more information.
- **Cluster:** Displays the cluster name to which the ContentBridge is assigned.



**NOTE:** High Bandwidth ContentBridges do not belong to clusters; for those devices, this field always displays "Unknown".

- **Wink Status:** Shows whether the Wink function is enabled on the unit. When Wink is On, front and back panel LEDs flash allowing you to quickly identify a unit in a rack. Click the Wink buttons at the end of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select the ContentBridge.
- **Wink on (button):** Click to change the wink status of all the selected ContentBridges to On.
- **Wink off (button):** Click to change the wink status of all the selected ContentBridges to Off.
- **Select all (button):** Click to select all the ContentBridges.
- **Clear (button):** Click to deselect all the ContentBridges.

In the **Network Switches** section ([Figure 16-8](#)), you can view the following items for each network switch found in the system:

- **IP Address:** Displays a unique identifier, typically the IP address of the switch.
- **Network Status:** Displays the unit's current network status, such as "Connected," etc.
- **System Up Time:** Displays the time the unit has been "up and running" in days, hours, minutes, seconds, and fractions of seconds.
- **Model:** Displays the switch type.
- **Switch Management (hyperlink):** Provides a link to the Switch Management (HP ProCurve Switch) page for the particular unit.

## About Re-replication (for ContentServer 1000 and 2000 Series only)

For the Re-replication statistic, a value of zero is normal (no re-replication occurred) and any value other than zero means one of the following occurred:

- The replication factor was changed to a higher number by the user (a lower number does not change what is shown on the page)
- Drive failure
- Entire ContentServer failure

## Viewing Properties and Processes Across Omneon MediaGrid Components

Choose from the following topics:

- [\*Viewing Properties for Clusters\*](#)
- [\*Viewing Properties for Volumes\*](#)
- [\*Viewing Properties for Groups\*](#)
- [\*Viewing Properties for the ContentServer 1000 and 2000 Series\*](#)
- [\*Viewing Properties for the ContentServer 3000 Series\*](#)
- [\*Viewing Properties for ContentStores\*](#)
- [\*Viewing Properties for ContentDirectors\*](#)
- [\*Viewing Properties for ContentBridges\*](#)
- [\*Viewing Properties for Network Switches\*](#)
- [\*Viewing Statistics for Clients in Clusters\*](#)
- [\*Viewing Grid Applications\*](#)
- [\*Viewing Process Monitoring on ContentDirectors and ContentBridges\*](#)

### Viewing Properties for Clusters

To view various properties for Omneon MediaGrid Clusters:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** sections, click the **Name** hyperlink for the required cluster to access the **Properties** page. *Figure 16–9* shows a sample **Cluster Properties** page.

The screenshot shows the 'Cluster Properties' page. At the top, there's a summary table with the following data:

Name	mgrid-qa16
#ContentDirectors	2
#Volumes	1
#Groups	1
#ContentServers	2
Total Disk Space	19.90 TB / 18.09 TiB
Free Space	67.63%

Below this is a 'Bandwidth Utilization' section with three metrics:

	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)
Cluster Bandwidth Utilization	0	153	0

There are also sections for 'Client Statistics', 'Slice Size Specification', 'ContentServer Configuration', and 'ContentServer Balancer Scheduling'.

The 'ContentBridge Configuration' section lists six ContentBridges with their IP addresses and configuration links:

ContentBridge	DNS Name	IP Address1	IP Address2	Config
CLB01912	CLB01912	10.4.249.189	10.4.249.190	<a href="#">View/Edit ContentBridge Config</a>
CLB01921	CLB01921	10.4.249.187	10.4.249.188	<a href="#">View/Edit ContentBridge Config</a>
CLB01956	CLB01956	10.4.249.186		<a href="#">View/Edit ContentBridge Config</a>
CLB01974	CLB01974	10.4.249.183	10.4.249.184	<a href="#">View/Edit ContentBridge Config</a>
CLB02230	CLB02230	10.4.249.181	10.4.249.182	<a href="#">View/Edit ContentBridge Config</a>

At the bottom, there are buttons for 'View/Edit Log Forwarding Options', 'Shutdown cluster', and 'Done'.

Figure 16–9: Omneon MediaGrid Cluster Properties

You can view the following properties in the general information section at the top of the page:

- **Name:** Displays the assigned name for the cluster. Refer to the *Omneon MediaGrid Installation and Configuration Guide* for a discussion about naming conventions to follow.
- **#ContentDirectors:** Displays the number of ContentDirectors assigned to the cluster.
- **#Volumes:** Displays the number of volumes present in the cluster.
- **#Groups:** Displays the number of groups present in the cluster.
- **#ContentServers:** Displays the number if the ContentServers present in the cluster.
- **Total Disk Space:** Displays the Total Disk Space across the cluster.
- **Free Space:** Displays the free disk space available across the cluster and as a percentage of Total Disk Space.
- **Bandwidth Utilization**
  - **Reads (MB/s):** Displays aggregate bandwidth usage in megabytes per second for network [deleted disk] “read” requests sent to the ContentServers in the cluster. This is the total network traffic measured by all the ContentServers in the cluster.
  - **Writes (MB/s):** Displays aggregate bandwidth usage in megabytes per second for network [deleted disk] “write” requests received by the ContentServers in the cluster. This is the total network traffic measured by all the ContentServers in the cluster.
  - **Re-replications (MB/s):** Displays aggregate bandwidth usage in megabytes per second for re-replication requests received by the ContentServers in the cluster. This is the total network traffic measured by all the ContentServers in the cluster. For more information on re-replication, refer to [About Re-replication \(for ContentServer 1000 and 2000 Series only\)](#).

- **Cluster Bandwidth Utilization:** Displays the percentage of average bandwidth usage per ContentServers in the cluster. This is calculated by combining the total read, write, and replication network traffic seen by all the ContentServers in the cluster, then divided by the total number of ContentServers in the cluster.



**NOTE:** The following buttons are enabled if at least one ContentDirector in the cluster is up.

- **Client Statistics:** Click [View Client Statistics](#) to display a list of clients connected to the cluster and the read and write transfer rates per client. Refer to [Viewing Statistics for Clients in Clusters](#) for detailed information.
- **Grid Applications:** Click [View Grid Applications](#) to view a Grid Application system view summary and detailed information on an application by application basis. Refer to [Viewing Grid Applications](#) for detailed information.
- **Slice Size Specification:** Click [View/Edit Slice Size Config](#) to access the “sliceSizeSpec” file associated with the cluster. Refer to [Editing the Slice Size Configuration File](#) for detailed information.
- **ContentServer Configuration:** Click [View/Edit ContentServer Config](#) to access the ContentServer configuration file associated with the cluster. Refer to [Editing the ContentServer Configuration File](#) for detailed information.
- **ContentServer Balancer Scheduling:** Click [View/Edit Balancer Scheduling](#) to access the Balancer Scheduling page, which allows you to enable and configure scheduled balancing for a cluster. For detailed information, refer to [Enabling and Configuring Scheduled Balancing](#).
- **ContentBridge Configuration:** Displays each ContentBridge and its corresponding DNS Name, and IP Addresses. Click [View/Edit ContentBridge Config](#) to access the configuration file for the selected ContentBridge. Refer to [Editing the ContentBridge Configuration File](#) for detailed information.
- **Sending E-mail of Log files Configuration:** Click [View/Edit Log Forwarding Options](#) to open the [Edit "Log Forwarding Configuration" file...](#) page which allows you to enable and configure log forwarding for a selected ContentDirector. For instructions on enabling and configuring log forwarding, refer to [Enabling and Configuring Log Forwarding](#).
- **Shutdown cluster:** Click [Shutdown all ContentDirectors](#) to begin shutting down all the ContentDirectors in the cluster. Once all ContentDirectors in the cluster are shut down, the **Shutdown all ContentBridges** in cluster button, will be activated. Once all ContentBridges are shut down, the **Shutdown all ContentServers** button will be activated. For step by step instructions, refer to [Powering Down an Omneon MediaGrid System](#).

In the **cluster** section you can view information pertaining to elements within the cluster. For reference, refer to [Figure 16-10](#).

Devices in Cluster - mgraids-qa19																
ContentDirectors																
Name	IP Address1	IP Address2	Network Status			Total Disk Space	Free Space (%)	Interface Out (MB/s)	Interface In (MB/s)	CPU Load (over 5 mins)	Mem Free (%)	Wink Status	Select			
mgraids-qa19-2	10.4.249.9	10.4.249.10	Connected -- Logged in as Administrator -- Error Alarm			149.38 TB / 135.86 TiB	4.06	0	0	0.87	0	Off	<input type="checkbox"/>			
mgraids-qa19-3	10.4.249.11	10.4.249.12	Connected -- Logged in as Administrator -- Error Alarm			149.38 TB / 135.86 TiB	4.06	1	1	1.67	0	Off	<input type="checkbox"/>			
<input type="button" value="Wink On"/> <input type="button" value="Wink Off"/> <input type="button" value="Select all"/> <input type="button" value="Clear"/>																
ContentServers/ContentStores																
Name	IP Address	Network Status	Total Disk Space	Free Space (%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	Interface Out (MB/s)	Interface In (MB/s)	CPU Load (over 5 mins)	Mem Free (%)	Vol Grp SId	CS Status	Wink Status	Select	
S30RN01020	10.4.249.80	Connected -- Error Alarm	29.88 TB / 27.17 TiB	4.07	0	0	0			0.0	28	0, 0, 4	OK	Off	<input type="checkbox"/>	
J32RN01015	10.4.249.81	Connected -- Error Alarm	29.88 TB / 27.17 TiB	4.07	0	0	0			0.0	28	0, 0, 2	OK	Off	<input type="checkbox"/>	
J32RN01019	10.4.249.89	Connected -- Error Alarm	29.88 TB / 27.17 TiB	4.07	0	0	0			0.0	28	0, 0, 3	OK	Off	<input type="checkbox"/>	
J32RN01020	10.4.249.90	Connected -- Error Alarm	29.88 TB / 27.17 TiB	4.07	0	0	0			0.0	28	0, 0, 1	OK	Off	<input type="checkbox"/>	
J32RN01022	10.4.249.95	Connected -- Error Alarm	29.88 TB / 27.17 TiB	4.07	0	0	0			0.0	28	0, 0, 0	OK	Off	<input type="checkbox"/>	
J32RN01022	10.4.249.96	Connected -- Error Alarm	29.88 TB / 27.17 TiB	4.07	0	0	0			0.0	28	0, 0, 0	OK	Off	<input type="checkbox"/>	
J32RN01022	10.4.249.97	Connected -- Error Alarm	29.88 TB / 27.17 TiB	4.05	0	0	0			0.0	28	0, 0, 0	OK	Off	<input type="checkbox"/>	
J32RN01022	10.4.249.98	Connected -- Error Alarm	29.88 TB / 27.17 TiB	4.05	0	0	0			0.0	28	0, 0, 0	OK	Off	<input type="checkbox"/>	
<input type="button" value="Shut Down"/> <input type="button" value="Wink On"/> <input type="button" value="Wink Off"/> <input type="button" value="Select all"/> <input type="button" value="Clear"/>																
ContentBridges																
Name	DNS Name	IP Address1	IP Address2	Interface Out (MB/s)	Interface In (MB/s)	CPU Load (over 5 mins)	Mem Free(%)	Network Status	Wink Status	Select						
CLB01976	CLB01976	10.4.249.56	10.4.249.54	0	0	0.14	52	Connected	Off	<input type="checkbox"/>	<input type="button" value="Wink On"/> <input type="button" value="Wink Off"/> <input type="button" value="Select all"/> <input type="button" value="Clear"/>					
Volumes																
Volume Id	Filesystem	#CS Groups	#Content Servers	Total Disk Space	Free Space(%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	Wink Status	Select						
0	testfs	1	5	149.38 TB / 135.86 TiB	4.06	0	0	0	Off	<input type="checkbox"/>	<input type="button" value="Wink On"/> <input type="button" value="Wink Off"/> <input type="button" value="Select all"/> <input type="button" value="Clear"/>					
<input type="button" value="Create Volume"/> <input type="button" value="Delete Volume"/>																
Groups																
Group Id	Volume Id	#Content Servers	Total Disk Space	Free Space(%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	Wink Status	Select							
0	0	5	149.38 TB / 135.86 TiB	4.06	0	0	0	Off	<input type="checkbox"/>	<input type="button" value="Wink On"/> <input type="button" value="Wink Off"/> <input type="button" value="Select all"/> <input type="button" value="Clear"/>						
<input type="button" value="Create Group"/> <input type="button" value="Delete Group"/> <input type="button" value="Shut Down Group"/>																
<input type="button" value="Done"/>																

Figure 16–10: ContentDirectors / ContentServers / ContentBridges Sections

### For ContentDirectors:

- **Name (hyperlink):** Displays the assigned name for each ContentDirector in the cluster. Click the hyperlink to access the ContentDirector Properties for the particular unit.
- **IP Address1:** Displays one of the Director's IP address.
- **IP Address2:** Displays one of the Director's IP address.
- **Network Status:** Displays the unit's current network status, authentication status, and security access level, including "Connected," "Not Responding," "Error," "Deleted," "Starting Upgrade"; "Authenticated", "Not Authenticated"; "Administrator".
- **Total Disk Space:** Displays the total disk space in each ContentDirector.
- **Free Space(%):** Displays the free disk space available for each ContentDirector and as a percentage of Total Disk Space.
- **Interface Out (MB/s):** Displays the rate at which data is transmitted and aggregated over all the network interface cards on the device.
- **Interface In (MB/s):** Displays the rate at which data is received and aggregated over all the network interface cards on the device.
- **CPU Load (over 5 mins):** Displays the system load average for the past 5 minutes for the unit.
- **Mem Free(%):** Displays the percentage of total free memory for the unit.

- **Wink Status:** Shows whether the Wink function is enabled on the unit. When Wink is On, front and back panel LEDs flash allowing you to quickly identify a unit in a rack. Click the Wink buttons at the end of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select a ContentDirector.
- **Wink on (button):** Click to change the wink status of all the selected units to On.
- **Wink off (button):** Click to change the wink status of all the selected units to Off.
- **Select all (button):** Click to select all the ContentDirectors.
- **Clear (button):** Click to deselect all ContentDirectors.

For **ContentServers/ContentStores:**

- **Name:** Displays the name assigned to the device. Note that for the ContentServer 3000 series, ContentServer names begin with S and ContentStore names begin with J. Click on the hyperlink to access the Properties page for each device
- **IP Address1:** Displays one of the Director's IP address.
- **IP Address2:** Displays one of the Director's IP address.
- **Network Status:** Displays the unit's current network status, such as "**Connected**," "**Not Responding**," "**Error**," "**Deleted**," "**Starting Upgrade**," etc.
- **Total Disk Space:** Displays the Total Disk Space for each ContentServer.
- **Free Space(%):** Displays the free disk space available in the ContentServer and as a percentage of Total Disk Space in each ContentServer.
- **Reads (MB/s):** Displays bandwidth usage in megabytes per second for drive "read" requests sent to the ContentServer.
- **Writes (MB/s):** Displays bandwidth usage in megabytes per second for drive "write" requests received by the ContentServer.
- **Re-replications (MB/s):** Displays bandwidth usage in megabytes per second for re-replication requests received by the ContentServer.
- **Interface Out (MB/s):** Displays the rate at which data is transmitted and aggregated over all the network interface cards on the device.
- **Interface In (MB/s):** Displays the rate at which data is received and aggregated over all the network interface cards on the device.
- **CPU Load (over 5 mins):** Displays the system load average for the past 5 minutes for the unit.
- **Mem Free(%):** Displays the percentage of total free memory for the unit.
- **Vol/Grp/CS ID:** Displays the volume number to which the ContentServer is assigned, the group number to which the ContentServer is assigned and the ID number assigned to the ContentServer.
- **CS Status:** Displays the ContentServer's current status, such as "**Connected**," "**Not Responding**," "**Error**," "**Deleted**," and "**Starting Upgrade**".
- **Wink Status:** Shows whether the Wink function is enabled on the unit. When Wink is On, front and back panel LEDs flash allowing you to quickly identify a unit in a rack. Click the Wink buttons at the end of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select a ContentServer.

- **Shut down (button):** Click to shut down a selected ContentServer or group of ContentServers. Note that this does not completely power down the ContentServer. For instructions on powering down, refer to *Powering Down or Restarting a Single ContentServer 1000 Series or 2000 Series*. For instructions on powering down your entire Omneon MediaGrid system, refer to *Powering Down an Omneon MediaGrid System*.



**NOTE:** This button is only available for ContentServers with Omneon MediaGrid firmware version 2.1.1, 2.2, or later.

- **Wink on (button):** Click to change the wink status of all the selected units to On.
- **Wink off (button):** Click to change the wink status of all the selected units to Off.
- **Select all (button):** Click to select all the ContentServers.
- **Clear (button):** Click to deselect all ContentServers.

#### For ContentBridges:

- **Name (hyperlink):** Displays the name assigned to the unit. Click on the hyperlink to access the ContentBridge's Properties page.
- **DNS Name:** The DNS name of the ContentBridge.
- **IP Address1:** Displays one of the Server's IP address.
- **IP Address2:** Displays one of the Server's IP address.
- **Interface Out (MB/s):** Displays the rate at which data is received and aggregated over all the network interface cards on the device.
- **Interface In (MB/s):** Displays the rate at which data is received and aggregated over all the network interface cards on the device.
- **CPU Load (over 5 mins):** Displays the system load average for the past 5 minutes for the unit.
- **Mem Free(%):** Displays the percentage of total free memory for the unit.
- **Network Status:** Displays the unit's current network status, such as "Connected," "Not Responding," "Error," "Deleted," "Starting Upgrade," etc.
- **Wink Status:** Shows whether the Wink function is enabled on the unit. When Wink is On, front and back panel LEDs flash allowing you to quickly identify a unit in a rack. Click the Wink buttons at the end of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select a ContentBridge.
- **Wink on (button):** Click to change the wink status of all the selected units to On.
- **Wink off (button):** Click to change the wink status of all the selected units to Off.
- **Select all (button):** Click to select all the ContentBridges.
- **Clear (button):** Click to deselect all ContentBridges.

#### For Volumes:

- **Volume ID:** Displays a numeric identifier for the volume in the cluster.
- **Filesystem:** Displays the File System associated with the volume
- **#CS Groups:** Displays the number of ContentServer groups in the volume.
- **#ContentServers:** Displays the number of ContentServers across the volume.

- **Total Disk Space:** Displays the total disk space in TB across the volume.
- **Free Space(%):** Displays the percentage of disk storage available across the volume.
- **Reads (MB/s):** Displays bandwidth usage in megabytes per second for drive “read” requests sent to the ContentServer.
- **Writes (MB/s):** Displays bandwidth usage in megabytes per second for drive “write” requests received by the ContentServer.
- **Re-replications (MB/s):** Displays bandwidth usage in megabytes per second for re-replication requests received by the ContentServer. For more information, refer to [About Re-replication \(for ContentServer 1000 and 2000 Series only\)](#).
- **Wink Status:** Shows whether the Wink function is enabled on the volume. When Wink is On, front and back panel LEDs flash on all units within the volume allowing you to quickly identify a volume in a rack. Click the Wink buttons at the end of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select a volume.
- **Create Volume (button):** Click to create a volume. For more information, refer to [Creating or Deleting a Volume](#). If a volume already exists, this button will be disabled.
- **Delete Volume (button):** Click to delete a volume. For more information, refer to [Creating or Deleting a Volume](#).
- **Wink on (button):** Click to change the wink status of all the units in the selected volume to On.
- **Wink off (button):** Click to change the wink status of all the units in the selected unit to Off.
- **Select All (button):** Click to select the volume.
- **Clear (button):** Click to deselect the volume.

#### For Groups:

- **Group ID:** Displays a numeric identifier for the group within the cluster.
- **Volume ID:** Displays a numeric identifier for the volume associated with the group.
- **#ContentServers:** Displays the number of ContentServers across the group.
- **Total Disk Space:** Displays the total disk space across the group.
- **Free Space(%):** Displays the free disk space available across the group.
- **Reads (MB/s):** Displays bandwidth usage in megabytes per second for drive “read” requests sent to the ContentServer.
- **Writes (MB/s):** Displays bandwidth usage in megabytes per second for drive “write” requests received by the ContentServer.
- **Re-replications (MB/s):** Displays bandwidth usage in megabytes per second for re-replication requests received by the ContentServer. For more information, refer to [About Re-replication \(for ContentServer 1000 and 2000 Series only\)](#).
- **Wink Status:** Shows whether the Wink function is enabled for the group. When Wink is On, front and back panel LEDs flash on all units within the group allowing you to quickly identify a group in a rack. Click the Wink buttons at the end of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select a group.

- **Create Group (button):** Click to create a group. For more information, refer to [Creating or Deleting Groups](#). If a volume already exists, this button will be disabled.
- **Delete Group (button):** Click to delete a group. For more information, refer to [Creating or Deleting Groups](#).
- **Shut Down Group (button):** Click to shut down the selected group of ContentServers. Note that this does not completely power down the ContentServers. For instructions on powering down, refer to [Powering Down or Restarting a Single ContentServer 1000 Series or 2000 Series](#). For instructions on powering down your entire Omneon MediaGrid system, refer to [Powering Down an Omneon MediaGrid System](#).



**NOTE:** This button is only available for ContentServers with Omneon MediaGrid firmware version 2.1.1, 2.2, or later.

- **Wink on (button):** Click to change the wink status of all the units in the selected group to On.
- **Wink off (button):** Click to change the wink status of all the units in the selected group to Off.
- **Select All (button):** Click to select all groups.
- **Clear (button):** Click to deselect all groups.

## Viewing Properties for Volumes

### To view properties for Omneon MediaGrid Volumes:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** section, click the **Name** hyperlink of the cluster which contains the required volume.
3. Scroll down the page to the **Volumes** section and click the name hyperlink for the required volume ID to access the Properties page. [Figure 16-11](#) shows a sample **Volume Properties** page.

The screenshot shows the 'Volume Properties' interface. At the top, there's a header bar with a 'Volume Properties' icon and the title. Below it is a table with the following data:

Volume Id	0
Cluster	cld-pf2
Number of Groups	1
Number of ContentServers	12

Under 'FileSystem', there's a section for 'testfs' with options to 'Name', 'Owner only access', and 'Open to all users'. A note says: 'To enable client access to the filesystem, edit the ContentBridge config file on the Cluster page after creating the filesystem. Reboot the ContentBridge for the changes to take effect.' Buttons for 'Create FileSystem', 'Change Permissions', and 'Delete FileSystem' are available.

Below this is a 'Default FileSystem Replication Factor' set to 1, with a 'Change Default Replication Factor' button. Disk space statistics show 'Total Disk Space' as 23.08 TB / 21.00 TiB and 'Free Disk Space' at 99.58%. Aggregate Network Bandwidth metrics show 'Reads (MB/s)', 'Writes (MB/s)', and 'Re-replications (MB/s)' all at 0.

The bottom part of the interface is titled 'Volume 0 in Cluster cld-pf2' and contains two tables:

Filesystem		Total Disk Space	Free Space(%)	Current Default Replication Factor		
Name	Total Disk Space			1		
testfs	23.08 TB / 21.00 TiB		99.58			

Groups		#Content Servers	Total Disk Space	Free Space(%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	Wink Status	Select
Group Id	Content Servers	Total Disk Space	Free Space(%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	Wink Status	Select	
0	12	23.08 TB / 21.00 TiB	99.58	0	0	0	Off	<input type="checkbox"/>	

Buttons for 'Create Group', 'Delete Group', 'Add Group to Volume...', and 'Remove Group from Volume' are at the bottom. There are also 'Wink On', 'Wink Off', 'Select all', and 'Clear' buttons.

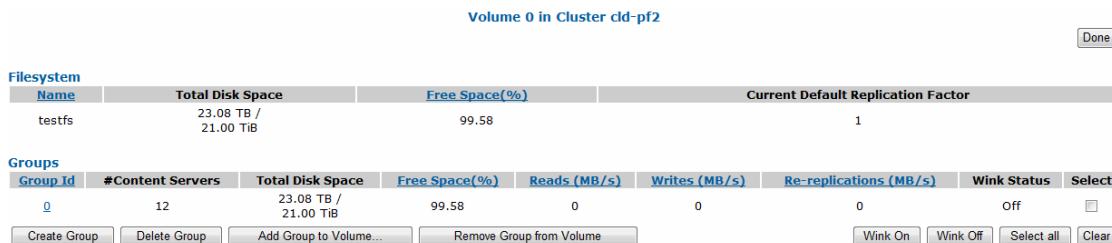
Figure 16–11: Volume Properties

4. In the general information section, you can view the following properties:
  - **Volume ID:** Displays a numeric identifier for the volume within the cluster.
  - **Cluster:** Displays the cluster to which the volume is assigned.
  - **Number of Groups:** Displays the number of groups assigned to the volume.
  - **Number of ContentServers:** Displays the number of ContentServers associated with the volume.
  - **FileSystem:** Displays the File System associated with the volume. This section allows you to create a file system, change permissions to an existing file system, or delete a file system. For more information, refer to [Creating or Deleting File Systems from a Volume](#), and [Setting or Changing File System Permissions](#).
  - **Default FileSystem Replication Factor:** Displays the default replication factor for all File Systems within the volume. The default replication factor is three. Refer to [Setting Replication Factors for File Systems](#) for additional information.
  - **Total Disk Space:** Displays the total disk space in TB across the volume.
  - **Free Space:** Displays the percentage of free disk space available across the volume.
  - **Aggregate Network Bandwidth:**
    - **Reads (MB/s):** Displays aggregate bandwidth usage in megabytes per second for drive requests sent to the ContentServers in the volume. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#).
    - **Writes (MB/s):** Displays aggregate bandwidth usage in megabytes per second for drive requests received by the ContentServers in the volume. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#).

- **Re-replications (MB/s):** Displays aggregate bandwidth usage in megabytes per second for re-replication requests received by the ContentServers in the volume. For more information, refer to [About Re-replication \(for ContentServer 1000 and 2000 Series only\)](#).

In the **Volume** section you can view information pertaining to elements associated with the volume as follows:

For **File Systems**, refer to [Figure 16-12](#).



The screenshot shows a table with two sections: 'Filesystem' and 'Groups'. In the 'Filesystem' section, there is one row for 'testfs' with columns: Name, Total Disk Space (23.08 TB / 21.00 TiB), Free Space(%) (99.58), and Current Default Replication Factor (1). In the 'Groups' section, there is one row for '0' with columns: Group Id, #Content Servers (12), Total Disk Space (23.08 TB / 21.00 TiB), Free Space(%) (99.58), Reads (MB/s) (0), Writes (MB/s) (0), Re-replications (MB/s) (0), Wink Status (Off), and Select (checkbox). Below the table are several buttons: Create Group, Delete Group, Add Group to Volume..., Remove Group from Volume, Wink On, Wink Off, Select all, and Clear.

Volume 0 in Cluster cld-pf2									<input type="button" value="Done"/>	
Filesystem		Current Default Replication Factor								
Name	Total Disk Space	Free Space(%)								
testfs	23.08 TB / 21.00 TiB	99.58								
Groups		#Content Servers	Total Disk Space	Free Space(%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	Wink Status	Select	
0	12	23.08 TB / 21.00 TiB	99.58	0	0	0	0	Off	<input type="checkbox"/>	
<input type="button" value="Create Group"/>		<input type="button" value="Delete Group"/>	<input type="button" value="Add Group to Volume..."/>	<input type="button" value="Remove Group from Volume"/>	<input type="button" value="Wink On"/> <input type="button" value="Wink Off"/> <input type="button" value="Select all"/> <input type="button" value="Clear"/>					

Figure 16-12: Volume properties – File System and Groups

- **Name:** Displays the name of the File System.
- **Total Disk Space:** Displays the total disk space available for the File System.
- **Free Space(%):** Displays the free disk space available for the File System.
- **Current Default Replication Factor:** Displays the currently configured default File System replication factor. Refer to [Setting Replication Factors for File Systems](#) for additional information.

For **Groups**, refer to [Figure 16-12](#).

- **Group ID:** Displays a numeric identifier for the group within the volume.
- **#ContentServers:** Displays the number of ContentServers across the group.
- **Total Disk Space:** Displays the total disk space across the group.
- **Free Space(%):** Displays the free disk space available across the group.
- **Reads (MB/s):** Displays bandwidth usage in megabytes per second for drive “read” requests sent to the group. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#).
- **Writes (MB/s):** Displays bandwidth usage in megabytes per second for drive “write” requests received by the group. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#).
- **Re-replications (MB/s):** Displays bandwidth usage in megabytes per second for re-replication requests received by the group. Refer to [Setting Replication Factors for File Systems](#) for additional information.
- **Wink Status:** Shows whether the Wink function is enabled for the group. When Wink is On, front and back panel LEDs flash on all units within the group allowing you to quickly identify a group in a rack. Click the Wink buttons at the end of the section to turn Wink On/Off.
- **Select:** Check the **Select** check box to select a group.
- **Create Group (button):** Click to create a new group in this volume.
- **Delete Group (button):** Click to delete the selected group(s).

- **Add Group to Volume... (button):** Click to attach the selected group(s) to this volume. If the selected group is already attached to a volume, a message will appear indicating that you must either create a new group, or free the selected group from its volume.
- **Remove Group from Volume (button):** Click to remove the selected group(s) from the volume.
- **Delete Group (button):** Click to delete the selected group(s).
- **Wink on (button):** Click to change the wink status of all the units in the group to On.
- **Wink off (button):** Click to change the wink status of all the units in the group to Off.
- **Select all (button):** Click to select all the groups in the volume.
- **Clear (button):** Click to deselect all groups.

#### For ContentServers:

- **Name:** Displays the assigned name for each device. Note that for the ContentServer 3000 series, ContentServer names begin with S and ContentStore names begin with J. Click on the hyperlink to access the Properties page for the unit.
- **IP Address 1:** Displays one of the Server's IP addresses.
- **IP Address 2:** Displays one of the Server's IP addresses.
- **Network Status:** Displays the unit's current network status, such as "Connected," "Not Responding," "Error," "Deleted," "Starting Upgrade" etc.
- **Total Disk Space:** Displays the Total Disk Space for each ContentServer.
- **Free Space(%):** Displays the free disk space available in the ContentServer and as a percentage of Total Disk Space in each ContentServer.
- **Reads (MB/s):** Displays bandwidth usage in megabytes per second for drive "read" requests sent to the ContentServer.
- **Writes (MB/s):** Displays bandwidth usage in megabytes per second for drive "write" requests received by the ContentServer.
- **Re-replications (MB/s):** Displays bandwidth usage in megabytes per second for re-replication requests received by the ContentServer. Refer to [Setting Replication Factors for File Systems](#) for additional information.
- **Group:** Displays the group number to which the ContentServer is assigned.
- **CS ID:** Displays the ID number assigned to the ContentServer.
- **CS Status:** Displays the ContentServer's current status, such as "No Cluster," "Initializing," "OK," "Degraded," and "Storage Failure."
- **Wink Status:** Shows whether the Wink function is enabled on the unit. When Wink is On, front and back panel LEDs flash allowing you to quickly identify a unit in a rack. Click the Wink buttons at the end of the section to turn Wink On/Off.

## Viewing Properties for Groups

### To view properties for Omneon MediaGrid Groups:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.

2. In the **Clusters** section, click the **Name** hyperlink of the cluster which contains the required group.
3. Scroll down the page to the **Groups** section and click the name hyperlink for the required Group ID to access the **Properties** page. *Figure 16-13* shows a sample **Group Properties** page.

You can view the following properties in the general information section at the top of the page:

The screenshot displays the 'Group Properties' interface. At the top, there's a header bar with the title 'Group Properties'. Below it is a summary table with the following data:

Group Id	0
Volume Id	0
Cluster	mgraid-qa16
Number of ContentServers	2
Total Disk Space	19.90 TB / 18.09 TiB
Free Disk Space	70.78%
Aggregate Network Bandwidth	Reads (MB/s) 0    Writes (MB/s) 0    Re-replications (MB/s) 0

Below this is a section titled 'Group 0 in Volume 0 of Cluster mgraid-qa16' containing a table of ContentServers:

Name	IP Address1	IP Address2	Network Status	Total Disk Space	Free Space (%)	Reads (MB/s)	Writes (MB/s)	Re-replications (MB/s)	SS Id	CS Status	Wink Status	Select
S30QA17478	10.4.249.167	10.4.249.168	Connected -- Warning Alarm	9.95 TB / 9.05 TiB	70.78	0	0	0	1	OK	Off	<input type="checkbox"/>
J32QA06803	10.4.249.173	10.4.249.174	Connected -- Warning Alarm	9.95 TB / 9.05 TiB	70.78	0	0	0	0	OK	NA	<input type="checkbox"/>

At the bottom of this section are several buttons: 'Add Servers to this Group', 'Remove Selected Servers', 'Shut Down Selected Servers', 'Wink On', 'Wink Off', 'Shut Down All Servers', 'Select All', 'Clear', and 'Done'.

**Figure 16-13: Group Properties**

- **Group ID:** Displays a numeric identifier for the group within the volume.
- **Volume ID:** Displays a numeric identifier for the Volume associated with the group.
- **Cluster:** Displays the cluster to which this group belongs.
- **Number of ContentServers:** Displays the number of ContentServers across the group.
- **Total Disk Space:** Displays the total disk space across the group.
- **Free Disk Space:** Displays the percentage of free disk space available across the group.
- **Aggregate Network Bandwidth:**
  - **Reads (MB/s):** Displays aggregate bandwidth usage in megabytes per second for drive requests sent to the ContentServers in the group.
  - **Writes (MB/s):** Displays aggregate bandwidth usage in megabytes per second for drive requests received by the ContentServers in the group.
  - **Re-replications (MB/s):** Displays aggregate bandwidth usage in megabytes per second for re-replication requests received by the ContentServers in the group. For more information about re-replication, refer to [About Re-replication \(for ContentServer 1000 and 2000 Series only\)](#).

In the **ContentServers** section you can view information pertaining to ContentServers within the group as follows:

- **Name:** Displays the assigned name for each device. Note that for the ContentServer 3000 series, ContentServer names begin with S and ContentStore names begin with J. Click on the hyperlink to access the Properties page for the unit.
- **IP Address 1:** Displays one of the Server's IP address.
- **IP Address 2:** Displays one of the Server's IP address.
- **Network Status:** Displays the unit's current network status, such as "Connected," "Not Responding," "Error," "Deleted," "Starting Upgrade" etc.
- **Total Disk Space:** Displays the Total Disk Space for each ContentServer.
- **Free Space(%):** Displays the free disk space available in the ContentServer and as a percentage of Total Disk Space in each ContentServer.
- **Reads (MB/s):** Displays bandwidth usage in megabytes per second for drive "read" requests sent to the ContentServer. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#).
- **Writes (MB/s):** Displays bandwidth usage in megabytes per second for drive "write" requests received by the ContentServer. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#).
- **Re-replications (MB/s):** Displays bandwidth usage in megabytes per second for re-replication requests received by the ContentServer. For more information about re-replication, refer to [About Re-replication \(for ContentServer 1000 and 2000 Series only\)](#)
- **CS ID:** Displays the ID number assigned to the ContentServer.
- **CS Status:** Displays the ContentServer's current status, such as "No Cluster," "Initializing," "OK," "Degraded," and "Storage Failure".
- **Wink Status:** Shows whether the Wink function is enabled on the unit. When Wink is On, front and back panel LEDs flash allowing you to quickly identify a ContentServer in a group. Click the Wink buttons at the end of the section to turn Wink On/Off.
- **Add Servers to this Group (button):** click to add a ContentServer to this Group. For step by step instructions on adding a ContentServer to a Group, refer to [Adding Servers to or Removing Servers from a Group](#).
- **Remove Selected Servers (button):** click to remove a ContentServer from this Group. For step by step instructions, refer to [Adding Servers to or Removing Servers from a Group](#).
- **Shut Down Selected Servers (button):** click to shut down one or more selected ContentServers from this Group. Note that this does not completely power down the ContentServer. For instructions on powering down, refer to [Powering Down or Restarting a Single ContentServer 1000 Series or 2000 Series](#). For instructions on powering down your entire Omneon MediaGrid system, refer to [Powering Down an Omneon MediaGrid System](#).
- **Wink on (button):** Click to change the wink status of all the ContentServers in the group to On.
- **Wink off (button):** Click to change the wink status of all the ContentServers in the group to Off.
- **Shut Down All Servers (button):** click to shut down all ContentServers in this Group. Note that this does not completely power down the ContentServer. For instructions on powering down, refer to [Powering Down or Restarting a Single ContentServer 1000 Series or 2000 Series](#). For instructions on powering down your entire Omneon MediaGrid system, refer to [Powering Down an Omneon MediaGrid System](#).



**NOTE:** This button is only available for ContentServers with Omneon MediaGrid firmware version 2.1.1, 2.2, or later.



**NOTE:** This button is only available for ContentServers with Omneon MediaGrid firmware version 2.1.1, 2.2, or later.

- **Select All (button):** Click to select all the ContentServers in the group.
- **Clear (button):** Click to deselect all ContentServers in the group.

## Viewing Properties for the ContentServer 1000 and 2000 Series

To view various properties for ContentServers:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required server to access the **Properties** page. *Figure 16-14* shows a portion of a **ContentServer Properties** page.

The screenshot displays the 'ContentServer Properties' page with the following sections and data:

- General Information:**
  - Name:** CSS01337
  - System Up Time:** 1:45:30.22
  - ContentServer ID:** 0
  - Serial Number:** 01337
  - Cluster:** mds8
  - Volume:** 0
  - Group:** 0
- Interface Information:**

	Interface	eth0	eth1
<b>IP Address</b>	10.30.25.189	10.30.24.186	
<b>MAC Address</b>	00 E0 81 5C 41 BC	00 E0 81 5C 41 BD	
<b>MTU</b>	1500	1500	
- Interface Statistics:**

	eth0 Receive	eth0 Transmit	eth1 Receive	eth1 Transmit
<b>Transfer Rate</b>	1.19 MB/s	2.72 MB/s	2.71 MB/s	1.42 MB/s
- Interface Counters (since agent boot):**

<b>Octets</b>	304097727	4119704133	445595988	1373783805
<b>Unicast Packets</b>	27522719	19383011	11685801	13932093
<b>Non Unicast Packets</b>	0	0	0	0
<b>Discards</b>	0	0	0	0
<b>Errors</b>	0	0	0	0
- Process Monitoring:**

Process	State
ntpd	Running
- ContentServer Description:**

Change Desc
- Last Message:** Tue:11:12:14: Successfully checked/added trap destination record with Manager's IP address.
- Wink State:** Off

**Figure 16-14: ContentServer Properties**

The following properties are displayed:

In the **General Information** section:

- **Name:** Displays the assigned name for the unit. Refer to the *Omneon MediaGrid Installation and Configuration Guide* for a discussion about naming conventions to follow.

- **System Up Time:** Displays the time the unit has been “up and running” in days, hours, minutes, seconds, and fractions of seconds.
- **ContentServer ID:** Displays the ID number assigned to the ContentServer.
- **Serial Number:** Displays the manufacturer’s serial number assigned to the unit.
- **Cluster:** Displays the Cluster name to which the unit is assigned.
- **Volume:** Displays the volume to which the unit is assigned.
- **Group:** Displays the group to which the ContentServer is assigned.
- **Interface Information** displays the following:
  - **Interface:** Displays the available interfaces for the unit.
  - **IP Address:** Displays the IP address assigned to each unit’s interface.
  - **MAC Address:** Displays the unique hardware number for each unit’s interface.
  - **MTU:** Shows the maximum size of Ethernet packets. An MTU greater than 1500 bytes indicates that Jumbo Frames are enabled.
- **(Interface Statistics) Transfer Rate:** Shows the receive and transmit rate for each interface.
- **Interface Counters (since agent boot):** Shows the raw interface counters since the SNMP agent was last booted.
- **Aggregate Network Bandwidth** displays the following:
  - **Reads (MB/s):** Displays aggregate bandwidth usage in megabytes per second for drive “read” requests received by the ContentServer. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#).
  - **Writes (MB/s):** Displays aggregate bandwidth usage in megabytes per second for drive “write” requests received by the ContentServer. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#).
  - **Re-replications (MB/s):** Displays aggregate bandwidth usage in megabytes per second for re-replication requests received by the ContentServer. For more information on re-replication, refer to [About Re-replication \(for ContentServer 1000 and 2000 Series only\)](#).
- **Process Monitoring:** Displays the name and state of the process running on the ContentServer.
- **Hardware Model:** Displays the unit’s model number.
- **Firmware Version:** Displays the version of firmware that resides in the unit’s memory.
- **Status:** Displays the current network status for the selected unit. This field is used primarily for diagnostic troubleshooting.
- **Status Current At:** Displays the most recent date and time that the page was refreshed. Note that the page is automatically refreshed every 30 seconds, unless configured otherwise.
- **Total Disk Space:** Displays the Total Disk Space available on the unit.
- **Free Disk Space:** Displays the amount of free disk space available on the unit.
- **Number of Disks:** Displays the total number of disk drives available in the ContentServer.
- **Number of Slots:** Displays the total number of disk drive slots available in the ContentServer.
- **CPU Load Average:** Displays the system load averages for the past 1, 5, and 15 minutes on the unit.

- **Memory Utilization:** Displays the total real memory, the available real memory, and the percentage of total free memory for the unit.
- **ContentServer Description:** Displays a scrollable multi-line description of the unit. This field is useful for entering data that clarifies the specific unit's role in the Omneon MediaGrid. Click **Change Desc** to edit the description.
- **Last Message:** Displays the last message (of any type) associated with the unit.
- **Wink State:** Displays the wink state of the unit's light bar, either On or Off. To change the Wink state, click the **Wink** button on this page.

In the **Environment** section:

<b>Environment:</b>		
<b>Power Supplies</b>		
<b>Power Supply 1</b>	NORMAL	
<b>Power Supply 2</b>	NORMAL	
<b>Voltage Levels</b>		
<b>3.3V Line</b>	3.30 Volts	( Range: 3.00 - 3.60 )
<b>5.0V Line</b>	5.07 Volts	( Range: 4.50 - 5.50 )
<b>12.0V Line</b>	11.90 Volts	( Range: 10.80 - 13.20 )
<b>Temperatures</b>		
<b>CPU Temperature</b>	32 Celsius	( Range: 10 - 72 )
<b>Motherboard Temperature</b>	41 Celsius	( Range: 10 - 57 )
<b>Fans</b>		
<b>Fan 1</b>	8459 RPM	( Range: 1000 - No Upper Limit )
<b>Fan 2</b>	14381 RPM	( Range: 1000 - No Upper Limit )
<b>Fan 3</b>	13532 RPM	( Range: 1000 - No Upper Limit )
<b>Fan 4</b>	7337 RPM	( Range: 1000 - No Upper Limit )
<b>Fan 5</b>	13815 RPM	( Range: 1000 - No Upper Limit )
<b>Fan 6</b>	6488 RPM	( Range: 1000 - No Upper Limit )
<b>Fan 7</b>	13815 RPM	( Range: 1000 - No Upper Limit )

Figure 16-15: ContentServer Properties – Environment

- **Power Supply:** Describes the state of the indicated power supply.
  - **NORMAL** = the power supply is OK
  - **ABSENT** = the power supply is not delivering power, or is not plugged in.
  - **FAILED** = the power supply has a hardware fault and is broken.



**NOTE:** This field does not appear for the ContentServer 1042-A or ContentServer 1042-B.

- **3.3V Line through 12.0V Line:** Displays the combined voltages present on the power supply's outputs. The values are displayed in volts. The valid range is also displayed. Note that this range is not user configurable.
- **CPU Temperature:** Displays the ambient temperature of air entering the ContentServer. The value is always displayed in degrees centigrade. The valid range is also displayed. Note that this range is not user configurable.
- **Motherboard Temperature:** Displays the temperature of the air above the ContentServer's motherboard. The value is always displayed in degrees centigrade. The valid range is also displayed. Note that this range is not user configurable.
- **Fan 1 through Fan 8:** Displays the speed (in RPM) of each of the ContentServer's fans. The valid range is also displayed. Note that this range is not user configurable.

- **Wink on/off (button):** Click the Wink button to change the wink state of the ContentServer light bar.
- **Reboot (button):** Click to restart the ContentServer without removing the power supply. For more information, refer to [Powering Down or Restarting a Single ContentServer 1000 Series or 2000 Series](#).
- **Shutdown (button):** Click to shut down the ContentServer. Note that this does not completely power down the ContentServer. For instructions on powering down, refer to [Powering Down or Restarting a Single ContentServer 1000 Series or 2000 Series](#). For instructions on powering down your entire Omneon MediaGrid system, refer to [Powering Down an Omneon MediaGrid System](#).

In the **Drive Information** section:

Drive Information:										
Slot	Serial #	Model	FwRev	Total Space	Total Used	Drive Status	SMART Errors	Total Slices	Bad Slices	Select
1	KRVN85ZAGXX8VF	HDS725050KLA360	K2AOA51A	500107 MB	4703 MB	Online	0	17624	0	<input type="checkbox"/>
2	KRVN03ZAGK052D	HDS725050KLA360	K2AOA51A	500107 MB	0 MB	Offline	0	0	0	<input type="checkbox"/>
3	KRVN03ZAGMSB2D	HDS725050KLA360	K2AOA51A	500107 MB	4425 MB	Online	0	17558	0	<input type="checkbox"/>
4	KRVN03ZAGK8J5D	HDS725050KLA360	K2AOA51A	500107 MB	1544 MB	Online	0	7003	0	<input type="checkbox"/>

[Migrate & Retire](#) [Select all](#) [Clear](#)

Figure 16–16: ContentServer Properties – Drive Information

- **Slot:** Displays the slot ID, which is the numeric identifier that represents the physical position for each disk drive in the ContentServer.
- **Drive Inserted:** Displays whether a drive is present in a slot, either Yes, or No.
- **Serial #:** Displays the manufacturer's serial number for each disk drive in the ContentServer.
- **Model:** Displays the manufacturer's model number for each disk drive.
- **FwRev:** Displays the firmware level within this drive of a ContentServer. This information is used primarily for debugging purposes.
- **Total Space:** Displays the total space available for each drive in the ContentServer.
- **Total Used:** Displays the total disk space in use for each disk drive in the ContentServer
- **Drive Status:** Displays the current operational status for each disk drive in the ContentServer.
- **SMART Errors:** Displays the number of SMART errors associated with each disk drive.
- **Total Slice:** Displays the total number of slices in each disk drive.
- **Bad Slices:** Displays the number of bad slices for each drive in a ContentServer.



**NOTE:** When the data integrity of a slice is compromised, it is considered a "bad slice". This could be due to corruption in data content, missing data, or if the slice size is different from expected value.



**NOTE:** In the unlikely event that the number of bad slices is greater than 15 per SystemManager polling loop, or greater than 128 per disk drive, an alarm will be generated.

- **Select all (button):** Click to select that disk drive.
- **Clear (button):** Click to clear all selections.

The **Events** section for ContentDirectors, ContentServers, and ContentBridges displays the following information when an alarm event occurs:

- **Level:** Displays the assigned severity level for an alarm event associated with a unit.
- **Time:** Displays the date and time when the alarm event occurred.
- **Event:** Displays the event which triggered the alarm on the unit.
- **Info:** Provides information on each event.
- **Clear? (button):** Displays when the unit has an alarm condition. Resolve the cause of the alarm condition and then click Clear to clear the alarm within the unit.
- **Delete (button):** Display when the unit has an alarm condition. Click to delete the event from the list and clear that event's Alarm icon.

## Viewing Properties for the ContentServer 3000 Series

To view properties for the ContentServer 3000:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentServer to access the **Properties** page. *Figure 16–17* shows a portion of a **ContentServer Properties** page.

ContentServer: S30RN01020									
<b>Associated IP address</b>	10.4.249.75/10.4.249.77								
<b>Status</b>	Connected								
<b>Status at time</b>	Thu Jan 26 11:18:25 2012								
<b>Model</b>	CSS-3000-4XO								
<b>Chassis Identification</b>	ESN 10511530RN01020								
<b>Cluster Info</b>	<table border="1"> <thead> <tr> <th>Cluster Name</th> <th>SSID</th> <th>Volume Id</th> <th>Group Id</th> </tr> </thead> <tbody> <tr> <td>mgraid-q419</td> <td>4</td> <td>0</td> <td>0</td> </tr> </tbody> </table>	Cluster Name	SSID	Volume Id	Group Id	mgraid-q419	4	0	0
Cluster Name	SSID	Volume Id	Group Id						
mgraid-q419	4	0	0						
<b>Disk Space</b>	29.88 TB / 27.17 TiB								
<b>Free Space</b>	49.64%								
<b>Memory Utilization</b>	Total Memory: 12288676 kilobytes, Free Memory: 248604 kilobytes (19% free)								
<b>Bandwidth</b>	<table border="1"> <thead> <tr> <th>Read (MB/s)</th> <th>Write (MB/s)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> </tr> </tbody> </table>	Read (MB/s)	Write (MB/s)	0	0				
Read (MB/s)	Write (MB/s)								
0	0								
<b>Wink State</b>	Off								
<input type="button" value="Wink On"/>									
<b>ContentServer Controllers</b>									
<input type="button" value="FailBack"/> <input type="button" value="Shutdown All Enclosures"/>									
<b>Name</b>	<b>ContentServer Controller 0</b>	<b>ContentServer Controller 1</b>							
<b>Status</b>	mgraid-10511530RN01020-0	mgraid-10511530RN01020-1							
<b>Model</b>	Connected	Connected							
<b>Serial</b>	1100140@	1100140@							
<b>Firmware Version</b>	3.1.0.0-20120123	3.1.0.0-20120123							
<b>BMC IP</b>	10.4.249.71	10.4.249.70							
<b>Management IP Address(es)</b>	10.4.249.74/10.4.249.76/	10.4.249.72/10.4.249.73/							
<b>Managed ContentServers and ContentStores</b>	J32RN01019 J32RN01020 J32RN01022	S30RN01020 J32RN01005 J32RN01015							
<b>Actions</b>	<input type="button" value="Shutdown"/> <input type="button" value="Reboot"/>	<input type="button" value="Shutdown"/> <input type="button" value="Reboot"/>							

Figure 16–17: ContentServer 3000 Properties

The following properties are displayed:

- **Associated IP address:** Displays the IP addresses of the slice server process in an active state for this ContentServer.
- **Status:** Shows the connection status of the ContentServer. Possible states include: Connected and Not Connected.

- **Status current at:** Shows the day/time that applies to the status.
- **Model:** Displays the manufacturer's model number for this unit.
- **Chassis Identification: ESN:** The ESN (Enclosure Serial Number) applies to the ContentServer chassis and can be found on the rear panel of the chassis.
- **Cluster Info:**
  - **Cluster Name:** Displays the Cluster name to which the unit is assigned.
  - **SSID:** Displays the numeric identifier for this ContentServer
  - **Volume Id:** Displays a numeric identifier for the group within the volume
  - **Group Id:** Displays a numeric identifier for the group within the volume
- **Disk Space:** Displays total disk space on the ContentServer.
- **Free Space:** Displays percentage of free space on the ContentServer.
- **Memory Utilization:** Displays the memory use for the unit.
- **Bandwidth:**
  - **Reads (MB/s):** Displays bandwidth usage in megabytes per second for drive "read" requests sent to the ContentServer. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#).
  - **Writes (MB/s):** Displays bandwidth usage in megabytes per second for drive "write" requests received by the ContentServer. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#)
- **Wink State:** Displays the Wink state of the unit.
- **Wink On/Off (button):** Click to change the wink state of the unit's light bar.

In the **ContentServer Controllers** section, the following are shown for each controller:



**NOTE:** When facing the rear panel of the ContentServer, Controller 0 is on the left-hand side and Controller 1 is on the right.

- **Failback (button):** Click to balance slice server processes across controllers. For information on using failback, refer to [Balancing the ContentServer 3000 Controllers](#).
- **Shutdown All Enclosures (button):** Click to shutdown both controllers on the ContentServer. Note that this also shuts down all managed ContentStores or ContentServers. For complete power down instructions, refer to [Powering Down an Omneon MediaGrid System](#).
- **Name:** Displays the factory default name for the controller.
- **Status:** Displays the connection status for the controller.
- **Model:** Displays the model number for the controller.
- **Serial:** Displays the serial number for the controller
- **Firmware Version:** Displays the version of firmware installed on the controller.
- **BMC IP:** IP address of the BMC for this controller. The BMC is used by Technical Support for troubleshooting purposes only.



**NOTE:** The BMC IP address uses the NIC 0 connector.

- **Management IP Address(es):** Displays the IP addresses that correspond to the indicated controller.
- **Managed ContentServers and ContentStores:** Displays a link to the ContentServer and ContentStore(s) being managed by this controller.



**NOTE:** If this field shows many more ContentStores or ContentServers being managed by one controller than the other, it may indicate that the system needs to be balanced. Refer to *Balancing the ContentServer 3000 Controllers* for information on balancing.

- **Actions:**

- **Shutdown** (button): Click to power down the controller.
  - **Reboot** (button): Click to reboot the controller.

In the **RAID Sets** section:

RAID Sets				
Name	GUID	Type	Status	Select
RaidSet147352	<a href="#">813ca3aa-3571a206</a>	(2+1)	Normal , Online	<input type="checkbox"/>
RaidSet147353	<a href="#">88d8e93c-8ee74e81</a>	(2+1)	Normal , Online	<input type="checkbox"/>
RaidSet147357	<a href="#">89f8bb73-88946869</a>	(2+1)	Normal , Online	<input type="checkbox"/>
RaidSet147358	<a href="#">8e219c9c-88077619</a>	(2+1)	Normal , Online	<input type="checkbox"/>
RaidSet147360	<a href="#">8e2f3366-c2b2ec67</a>	(2+1)	Normal , Online	<input type="checkbox"/>

**Buttons:** Set Offline | Set Online | Destroy | Select All | Clear

Figure 16-18: ContentServer 3000 Properties—RAID Sets

- **Name:** Displays the name of the RAID set.
- **GUID:** Displays the numeric identifier for the RAID set. Click this link to open the RAID Utilities page this RAID set. For details on the RAID Utilities page, refer to *Viewing RAID Set Information*.
- **Type:** Displays the RAID configuration for the corresponding RAID set. For more information, refer to *Supported RAID Configurations for the ContentServer 3000 and ContentStore 3160*.
- **Status:** Displays the status of the RAID set. The status may include the following:
  - **Normal:** The RAID set is usable and all drives are available.
  - **Comprised:** The RAID set is usable but one or two of the parity drives may be missing or not responding.
  - **Not Viable:** The RAID set is not usable due to missing drives or drives not responding.
  - **Online:** The RAID set is online and you may access the drives.
  - **Offline.** The RAID set is offline and you cannot access the drives.
- **Select:** Click to select a RAID set.
- **Set Offline** (button): Click to take the selected RAID set offline, in which case the data on the drives will not be accessible.
- **Set Online** (button): Click to move the selected RAID set online, in which case the data on the drives will be accessible.
- **Destroy** (button): Click to delete a selected RAID set. Before destroying a RAID set, you must first take the RAID set offline by clicking **Set Offline**.



**NOTE:** Clicking **Destroy** will destroy all data in a RAID set.

- **Select All:** Click to select all RAID sets.
- **Clear:** Click to clear the selections.

In the **Drives** section:

<b>Drives</b>						
<b>Slot</b>	<b>GUID</b>	<b>Model</b>	<b>Fw Version</b>	<b>Status</b>	<b>RAID Set</b>	<b>Select</b>
0	<a href="#">fe574443-261d74f6</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">89f8bb73-88946869</a>	<input type="checkbox"/>
1	<a href="#">fe574443-31fbfd6</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">89f8bb73-88946869</a>	<input type="checkbox"/>
2	<a href="#">fe574443-82d1d40f</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">89f8bb73-88946869</a>	<input type="checkbox"/>
3	<a href="#">fe574443-5c7649d0</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e2f3366-c2b2ec67</a>	<input type="checkbox"/>
4	<a href="#">fe574443-7b723161</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e2f3366-c2b2ec67</a>	<input type="checkbox"/>
5	<a href="#">fe574443-66633067</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e2f3366-c2b2ec67</a>	<input type="checkbox"/>
6	<a href="#">fe574443-b7225fc6</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e219c9c-88077619</a>	<input type="checkbox"/>
7	<a href="#">fe574443-1a1aef82</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e219c9c-88077619</a>	<input type="checkbox"/>
8	<a href="#">fe574443-91343c9c</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e219c9c-88077619</a>	<input type="checkbox"/>
9	<a href="#">fe574443-77af8b97</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">813ca3aa-3571a206</a>	<input type="checkbox"/>
10	<a href="#">fe574443-3bcf2d85</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">813ca3aa-3571a206</a>	<input type="checkbox"/>
11	<a href="#">fe574443-821d9598</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">813ca3aa-3571a206</a>	<input type="checkbox"/>
12	<a href="#">fe574443-fa411b9d</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">88d8e93c-8ee74e81</a>	<input type="checkbox"/>
13	<a href="#">fe574443-cd386f9a</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">88d8e93c-8ee74e81</a>	<input type="checkbox"/>
14	<a href="#">fe574443-ca7703cd</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">88d8e93c-8ee74e81</a>	<input type="checkbox"/>
15	<a href="#">fe574443-062aa483</a>	WDC-WD1003FBYX-0	01.01V01	Alive	Unraided	<input type="checkbox"/>

[Create RAID Set](#)
[Auto Create RAID Set](#)
[Wink On](#)
[Wink Off](#)
[Fail Drives](#)
[Unfail Drives](#)
[Repair Drives](#)
[Select All](#)
[Clear](#)

Note: Selection of drives is not required on this page for Create RAID Set and Auto Create RAID Set actions.

**Figure 16–19: ContentServer 3000 Properties—Drives**

- **Slot:** Displays the ContentServer slot number for each drive.
- **GUID:** Displays the numeric identifier for the disk drive. Click this link to open the Drive Properties page for this drive. For details on the Drive Properties page, refer to [Viewing Drive Properties](#).
- **Model:** Displays the drive model number.
- **Fw Version:** Displays the drive firmware.
- **Status:** Displays the drive status. The status may indicate one of the following:
  - **Alive:** The drive is available.
  - **Dead:** The drive is not responding.
  - **Missing:** The drive is not part of the system.
  - **Unavailable:** The drive is not currently available.
  - **Formatting:** The drive is being formatted.
  - **Repairing:** The drive is being repaired.
  - **Unknown:** SystemManager cannot identify the drive state.
  - **Alive, Hot Spare:** The drive is available and assigned as a Hot Spare.

- **RAID set:** Displays the GUID for the associated RAID set. Click this link to open the RAID Utilities page for the associated RAID set. If the drive is not assigned to a RAID set, this column will display, "Unraided."
- **Select:** Click to select a drive.
- **Create RAID Set:** Click to open the Create RAID Set page where you can manually create a RAID set. For more information, refer to [Creating a RAID Set](#).
- **Auto Create RAID Set:** Click to open the Auto Create RAID set page and use the Auto Create utility to create a RAID set. For more information, refer to [Creating a RAID Set with Auto Create](#).
- **Wink On:** Click to wink the selected drive(s).
- **Wink Off:** Click to stop winking the selected drive(s).
- **Fail Drives:** Click to remove the selected drive(s) from the RAID set.
- **Unfail Drives:** Click to make the selected drive(s) available to be used in a RAID set.
- **Select All:** Click to select all drives.
- **Clear:** Click to clear the selections.

In the Environment section:

ContentServer Environment Data			
ContentServer Controller 0		ContentServer Controller 1	
<b>Fans</b>		<b>Fans</b>	
Back Fan1	9480 RPM	Back Fan1	9840 RPM
Back Fan2	9360 RPM	Back Fan2	9720 RPM
Back Fan3	9120 RPM	Back Fan3	9360 RPM
Front Fan1	9384 RPM	Front Fan1	9384 RPM
Front Fan2	9384 RPM	Front Fan2	9384 RPM
Front Fan3	9384 RPM	Front Fan3	8500 RPM
<b>Temperatures</b>		<b>Temperatures</b>	
Back Temp	31 Celsius	Back Temp	35 Celsius
System Temp	35 Celsius	System Temp	34 Celsius
UmemTemp 0	26 Celsius	UmemTemp 0	23 Celsius
UmemTemp 1	28 Celsius	UmemTemp 1	28 Celsius
UmemTemp 2	27 Celsius	UmemTemp 2	28 Celsius
<b>Temperature Status</b>		<b>Temperature Status</b>	
CPU1 Temp	NORMAL	CPU1 Temp	NORMAL
CPU2 Temp	NORMAL	CPU2 Temp	NORMAL
<b>Power Supply Status</b>		<b>Power Supply Status</b>	
PS Status 1	NORMAL	PS Status 1	NORMAL
PS Status 2	NORMAL	PS Status 2	NORMAL
<b>Battery Charge</b>		<b>Battery Charge</b>	
UmemCharge 0	100 %	UmemCharge 0	100 %
UmemCharge 1	100 %	UmemCharge 1	100 %
UmemCharge 2	100 %	UmemCharge 2	100 %
<b>Voltages</b>		<b>Voltages</b>	
CPU1 Vcore	1.03 Volts	CPU1 Vcore	1.09 Volts
CPU2 Vcore	1.19 Volts	CPU2 Vcore	1.16 Volts
+5V	5.08 Volts	+5V	5.08 Volts
+5VSB	5.00 Volts	+5VSB	4.96 Volts
+12V	11.90 Volts	+12V	11.81 Volts
CPU1DIMM	1.54 Volts	CPU1DIMM	1.54 Volts
CPU2DIMM	1.54 Volts	CPU2DIMM	1.54 Volts
+1.5V	1.51 Volts	+1.5V	1.51 Volts
+3.3V	3.29 Volts	+3.3V	3.26 Volts
+3.3VSB	3.31 Volts	+3.3VSB	3.31 Volts
VBAT	3.34 Volts	VBAT	3.34 Volts
UmemVolt 0	4.15 Volts	UmemVolt 0	4.14 Volts
UmemVolt 1	4.15 Volts	UmemVolt 1	4.14 Volts
UmemVolt 2	4.15 Volts	UmemVolt 2	4.14 Volts

Figure 16–20: ContentServer Properties – Environment

For each controller, the following values are displayed.

- **Back Fan 1–3 and Front Fan 1–3:** Displays the speed (in RPM) of each of the controller's fans.
- **Back Temp – UmemTemp2:** Display the temperature of the air at different locations above the controller motherboard.
- **Temperature Status: CPU1–2:** Displays the status of the two CPUs' temperatures:

- NORMAL:** Normal temperature
- ABOVE\_NORM:** Above normal temperature.
- HOT:** Temperature is critically hot
- OVERHEATED:** CPU is overheated.
- **Power Supply Status:** PS Status 1-2: Displays the status of the two power supplies.



**NOTE:** The status may include any combination of the following states other than OK.

- OK:** Power status is OK.
- FAILED:** Power has failed.
- OVERVOLT:** Over-voltage.
- UNDERVOLT:** Under-voltage.
- OVERCURR:** Over-current.
- INPUTERR:** Under-current.
- CONFIGERR:** Configuration error.
- **Battery Charge:** UmemCharge 0-2: Displays the percentage of available charge for each of the batteries on the NVRAM card.
- **Voltages:** CPU1Vcore through UmemVolt 2: Displays the voltages of the various components on the controller. The values are displayed in volts.

## Viewing Properties for ContentStores

### To view properties for the ContentStore 3160:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentStore to access the **Properties** page. *Figure 16-21* shows a portion of a **ContentStore Properties** page.

ContentStore: J32QA04025														
Associated IP address	10.4.252.240/10.4.252.248			Associated ContentServer	S30QA03640									
Status	Connected -- Error Alarm			Active ContentServer Controller	mgraids-11181530QA03640-0									
Status at time	Thu Feb 2 11:20:21 2012			Disk Space	23.81 TB / 21.66 TiB									
Model	CSJ-3160			Free Space	100.00%									
Chassis Identification	<b>ESN</b> 11181532QA04025			Bandwidth	<b>Read (MB/s)</b> 0									
Cluster Info	Cluster Name	SSID	Volume Id	Group Id	<b>Write (MB/s)</b> 0									
	qa7	1	0	0										
Wink State	On			Shutdown	Failback									
<input type="button" value="Wink Off"/> <b>ContentStore Controllers</b> <table border="1"> <tr> <th colspan="2">ContentStore Controller 0</th> <th>ContentStore Controller 1</th> </tr> <tr> <td>Serial</td> <td>11181542QA01032</td> <td>11181542QA01033</td> </tr> <tr> <td>World Wide Number(WWN) (hex)</td> <td>0x50030480003f19ff</td> <td>0x50030480003f19ff</td> </tr> </table>						ContentStore Controller 0		ContentStore Controller 1	Serial	11181542QA01032	11181542QA01033	World Wide Number(WWN) (hex)	0x50030480003f19ff	0x50030480003f19ff
ContentStore Controller 0		ContentStore Controller 1												
Serial	11181542QA01032	11181542QA01033												
World Wide Number(WWN) (hex)	0x50030480003f19ff	0x50030480003f19ff												

**Figure 16-21: ContentStore Properties**

The following properties are displayed:

- **Associated IP address:** Displays the IP addresses of the slice server process in an active state for the ContentServer controlling this ContentStore.
- **Status:** Shows the connection status of the ContentStore.
- **Status at time:** Shows the day/time that applies to the status.
- **Model:** Displays the manufacturer's model number for this unit.
- **Chassis Identification: ESN:** The ESN (Enclosure Serial Number) applies to the ContentStore chassis and can be found on the rear panel of the chassis.
- **Cluster Info:**
  - **Cluster Name:** Displays the Cluster name to which the unit is assigned.
  - **SSID:** Displays the numeric identifier for this ContentStore
  - **Volume Id:** Displays a numeric identifier for the group within the volume
  - **Group Id:** Displays a numeric identifier for the group within the volume
- **Wink State:** Displays the Wink state of the unit.
- **Wink On/Off (button):** Click to change the wink state of the unit's light bar.
- **Associated ContentServer:** Displays the name of the ContentServer controlling this ContentStore. Click the link to open the Properties page for the associated ContentServer.
- **Active ContentServer Controller:** Displays the name of the active ContentServer controller for this ContentStore.
- **Disk Space:** Displays total disk space on the ContentStore inTerabytes.
- **Free Space:** Displays percentage of free space on the ContentStore.
- **Memory Utilization:** Displays the memory use for the unit.
- **Bandwidth:**
  - **Reads (MB/s):** Displays bandwidth usage in megabytes per second for drive "read" requests sent to the ContentStore. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#).
  - **Writes (MB/s):** Displays bandwidth usage in megabytes per second for drive "write" requests received by the ContentStore. For more information, refer to [About ContentServer and Cluster Bandwidth Measurements](#)
- **Shutdown (button):** Click to shut down the ContentStore. For complete power down instructions, refer to [Powering Down a Single ContentStore](#).
- **Fallback (button):** Click to balance slice server processes across controllers. For more information, refer to [Balancing the ContentServer 3000 Controllers](#).

In the **ContentStore Controllers** section:

- **Serial:** The serial number for each ContentStore controller.
- **World Wide Number (WWN) (hex):** The world wide identification number for each ContentStore controller.

In the **RAID Sets** section:

RAID Sets				
Name	GUID	Type	Status	Select
RaidSet147352	<a href="#">813ca3aa-3571a206</a>	(2+1)	Normal , Online	<input type="checkbox"/>
RaidSet147353	<a href="#">88d8e93c-8ee74e81</a>	(2+1)	Normal , Online	<input type="checkbox"/>
RaidSet147357	<a href="#">89f8bb73-88946869</a>	(2+1)	Normal , Online	<input type="checkbox"/>
RaidSet147358	<a href="#">8e219c9c-88077619</a>	(2+1)	Normal , Online	<input type="checkbox"/>
RaidSet147360	<a href="#">8e2f3366-c2b2ec67</a>	(2+1)	Normal , Online	<input type="checkbox"/>

**Set Offline** **Set Online** **Destroy** **Select All** **Clear**

Figure 16–22: ContentStore Properties—RAID Sets

- **Name:** Displays the name of the RAID set.
- **GUID:** Displays the numeric identifier for the RAID set. Click this link to open the RAID Utilities page this RAID set. For details on the RAID Utilities page, refer to [Viewing RAID Set Information](#).
- **Type:** Displays the RAID configuration for the corresponding RAID set. For more information, refer to [Supported RAID Configurations for the ContentServer 3000 and ContentStore 3160](#).
- **Status:** Displays the status of the RAID set. The status may include the following:
  - **Normal:** The RAID set is usable and all drives are available.
  - **Comprised:** The RAID set is usable but one or two of the parity drives may be missing or not responding.
  - **Not Viable:** The RAID set is not usable due to missing drives or drives not responding.
  - **Online:** The RAID set is online and you may access the drives.
  - **Offline.** The RAID set is offline and you cannot access the drives.
- **Select:** Click to select a RAID set.
- **Set Offline** (button): Click to take the selected RAID set offline, in which case the data on the drives will not be accessible.
- **Set Online** (button): Click to move the selected RAID set online, in which case the data on the drives will be accessible.
- **Destroy** (button): Click to delete a selected RAID set. Before destroying a RAID set, you must first take the RAID set offline by clicking **Set Offline**.



**NOTE:** Clicking **Destroy** will destroy all data in a RAID set.

- **Select All:** Click to select all RAID sets.
- **Clear:** Click to clear the selections.

In the **Drives** section:

Drives						
Slot	GUID	Model	Fw Version	Status	RAID Set	Select
0	<a href="#">fe574443-261d74f6</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">89f8bb73-88946869</a>	<input type="checkbox"/>
1	<a href="#">fe574443-31fbdd6</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">89f8bb73-88946869</a>	<input type="checkbox"/>
2	<a href="#">fe574443-82d1d40f</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">89f8bb73-88946869</a>	<input type="checkbox"/>
3	<a href="#">fe574443-5c7649d0</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e2f3366-c2b2ec67</a>	<input type="checkbox"/>
4	<a href="#">fe574443-7b723161</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e2f3366-c2b2ec67</a>	<input type="checkbox"/>
5	<a href="#">fe574443-66633067</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e2f3366-c2b2ec67</a>	<input type="checkbox"/>
6	<a href="#">fe574443-b7225fc6</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e219c9c-88077619</a>	<input type="checkbox"/>
7	<a href="#">fe574443-1a1aef82</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e219c9c-88077619</a>	<input type="checkbox"/>
8	<a href="#">fe574443-91343c9c</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">8e219c9c-88077619</a>	<input type="checkbox"/>
9	<a href="#">fe574443-77af8b97</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">813ca3aa-3571a206</a>	<input type="checkbox"/>
10	<a href="#">fe574443-3bcf2d85</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">813ca3aa-3571a206</a>	<input type="checkbox"/>
11	<a href="#">fe574443-821d9598</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">813ca3aa-3571a206</a>	<input type="checkbox"/>
12	<a href="#">fe574443-fa411b9d</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">88d8e93c-8ee74e81</a>	<input type="checkbox"/>
13	<a href="#">fe574443-cd386f9a</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">88d8e93c-8ee74e81</a>	<input type="checkbox"/>
14	<a href="#">fe574443-ca7703cd</a>	WDC-WD1003FBYX-0	01.01V01	Alive	<a href="#">88d8e93c-8ee74e81</a>	<input type="checkbox"/>
15	<a href="#">fe574443-062aa483</a>	WDC-WD1003FBYX-0	01.01V01	Alive	Unraided	<input type="checkbox"/>

Note: Selection of drives is not required on this page for Create RAID Set and Auto Create RAID Set actions.

**Figure 16–23: ContentStore Properties—Drives**

- **Slot:** Displays the ContentStore slot number for each drive.
- **GUID:** Displays the numeric identifier for the disk drive. Click this link to open the Drive Properties page for this drive. For details on the Drive Properties page, refer to [Viewing Drive Properties](#).
- **Model:** Displays the drive model number.
- **Fw Version:** Displays the drive firmware.
- **Status:** Displays the drive status. The status may indicate one of the following:
  - **Alive:** The drive is available.
  - **Dead:** The drive is not responding.
  - **Missing:** The drive is not part of the system.
  - **Unavailable:** The drive is not currently available.
  - **Formatting:** The drive is being formatted.
  - **Repairing:** The drive is being repaired.
  - **Unknown:** SystemManager cannot identify the drive state.
  - **Alive, Hot Spare:** The drive is available and assigned as a Hot Spare.
- **RAID set:** Displays the GUID for the associated RAID set. Click this link to open the RAID Utilities page for the associated RAID set.
- **Select:** Click to select a drive.
- **Create RAID Set:** Click to open the Create RAID Set page where you can manually create a RAID set. For more information, refer to [Creating a RAID Set](#).
- **Auto Create RAID Set:** Click to open the Auto Create RAID set page and use the Auto Create utility to create a RAID set. For more information, refer to [Creating a RAID Set with Auto Create](#).

- **Wink On:** Click to wink the selected drive(s).
- **Wink Off:** Click to stop winking the selected drive(s).
- **Fail Drives:** Click to remove the selected drive(s) from the RAID set.
- **Unfail Drives:** Click to make the selected drive(s) available to be used in a RAID set.
- **Select All:** Click to select all drives.
- **Clear:** Click to clear the selections.

In the Environment section:

ContentStore Environment Data			
ContentStore Controller 0		ContentStore Controller 1	
Fans		Fans	
Back Fan1	10200 RPM	Back Fan1	10200 RPM
Back Fan2	10200 RPM	Back Fan2	10200 RPM
Back Fan3	10080 RPM	Back Fan3	10080 RPM
Temperatures		Temperatures	
Back Temp	40 Celsius	Back Temp	40 Celsius
Voltages		Voltages	
5V	5.08 Volts	5V	5.08 Volts
12V	12.06 Volts	12V	12.06 Volts

Figure 16–24: ContentStore Properties—Environment

- **Fans:** **Back Fan 1–3:** Displays the speed (in RPM) of each of the ContentStore controller's fans.
- **Temperatures:** **Back Temp:** Display the temperature of the air above the ContentStore controller motherboard.
- **Voltages:** **5V-12V:** Displays the voltages of the various components on the controller. The values are displayed in volts.

## Viewing Properties for ContentDirectors

This section describes the properties page for the ContentDirector 1000 series and High Performance ContentDirector 2000.

### To view various properties for ContentDirectors:

1. From the Configuration tab, click the **Servers & Switches** icon in the left-hand column to access the **Servers & Switches** page.
2. In the **ContentDirectors** section, click the **Name** hyperlink for the required unit to access the **Properties** page (*Figure 16–25*).

ContentDirector Properties								
General Information:								
<b>Name</b>	mgraids-qa19-2							
<b>System Up Time</b>	1 day, 4:40:33.7							
<b>Model Number</b>	HPLCD2000A							
<b>Serial Number</b>	8RYWBQ1							
<b>Cluster Name</b>	mgraids-qa19							
<b>Firmware Version</b>	3.1.0.0-20120123							
<b>Interface Information</b>		eth0	eth1	eth2	eth3			
<b>IP Address</b>	10.4.249.9	10.4.249.10	192.168.2.8	192.168.3.8				
<b>MAC Address</b>	78 2B CB 19 9C AA	78 2B CB 19 9C AB	00 1B 21 91 93 2C	00 1B 21 91 93 2D				
<b>MTU</b>	1500	1500	1500	1500				
<b>Interface Statistics</b>		<b>eth0 Receive</b>	<b>eth0 Transmit</b>	<b>eth1 Receive</b>	<b>eth1 Transmit</b>	<b>eth2 Receive</b>	<b>eth2 Transmit</b>	<b>eth3 Receive</b>
<b>Transfer Rate</b>	0.02 MB/s	0.09 MB/s	0.00 MB/s	0.00 MB/s	0.59 MB/s	0.52 MB/s	0.01 MB/s	0.08 MB/s
<b>Interface Counters (since agent boot)</b>		<b>Octets</b>	2157528037	916089331	2765669385	1395168613	1337806091	535411625
<b>Unicast Packets</b>	41061166	32894243	12937346	12653723	54789878	53536355	17161865	18405519
<b>NonUnicast Packets</b>	6	0	6	0	0	0	0	0
<b>Discards</b>	0	0	0	0	0	0	0	0
<b>Errors</b>	0	0	0	0	0	0	0	0
<b>Process Monitoring</b>		<b>Process</b>	<b>State</b>		<b>DHCP Failover</b>			
		dhcpd	Running		<b>Failover</b>	<b>Name</b>	<b>State</b>	<b>Relationship</b>
			1st failover pool		Public	Communications	Interrupted	Secondary
			2nd failover pool					
		ntpd	Running					
		winbind	Running					
		logrotate	Running					
		mdssstartup	Running					
		oujfh	Running					
		ousd	Running					
		ssmd	Running					
		ssmgc	Running					
		mdscore	Running					

Figure 16–25: ContentDirector Properties (Upper Section)

The following properties are displayed in the upper section of the page:

- **Name:** Displays the assigned name for the unit. Refer to the *Omneon MediaGrid Installation and Configuration Guide* for a discussion about naming conventions to follow.
- **System Up Time:** Displays the time the unit has been “up and running” in days, hours, minutes, seconds, and fractions of seconds.
- **Model Number:** Displays the Harmonic model number for the unit.
- **Serial Number:** Displays the manufacturer’s serial number assigned to the unit.
- **Cluster Name:** Displays the cluster name to which the unit is assigned.
- **Firmware Version:** Displays the version of firmware that resides in the unit’s memory.
- **Interface Information**
  - **Interface:** Displays the available interfaces for the unit.



**NOTE:** If a VLAN port is disconnected, the associated IP address will transfer to the remaining interface, which will be displayed in the following format: **eth 0:0**.

- **IP Address:** Displays the IP address assigned to each unit’s interface.
- **MAC Address:** Displays the unique hardware number for each unit’s interface.
- **MTU:** Shows the maximum size of Ethernet packets. An MTU greater than 1500 bytes indicates that Jumbo Frames are enabled.
- **Interface Statistics:** Transfer Rate: Shows the receive and transmit rate for each interface.

- **Interface Counters (since agent boot):** Shows the raw interface counters for each interface since the SNMP agent was last booted.
- **Process Monitoring**
  - **Process:** Displays the name of the process running on the ContentDirector. Refer to [Viewing Process Monitoring on ContentDirectors and ContentBridges](#) for more information.\
  - **State:** Displays the current state of the process running on the ContentDirector. The states are: Running, Stopped, or N.A (Not Applicable).
  - **DHCP Failover:** Identifies the failover pool.
  - **DHCP Name:** Displays the name of the failover pool.
  - **DHCP State:** Displays the state of the DHCP server in the first or second pool of addresses. The states are:
    - Partner Down
    - Normal
    - Communications Interrupted
    - Resolution Interrupted
    - Potential Conflict
    - Recover
    - Recover Done
    - Shutdown
    - Paused
    - Startup
    - Recover Wait
  - **DHCP Relationship:** Displays the relationship of the server to the first or second pool of addresses. **Primary** indicates that the DHCP server is configured to provide primary service to the set of DHCP clients for a particular set of subnet address pools. **Secondary** indicates that the DHCP server is configured to act as backup to the primary server for a particular set of subnet address pools.

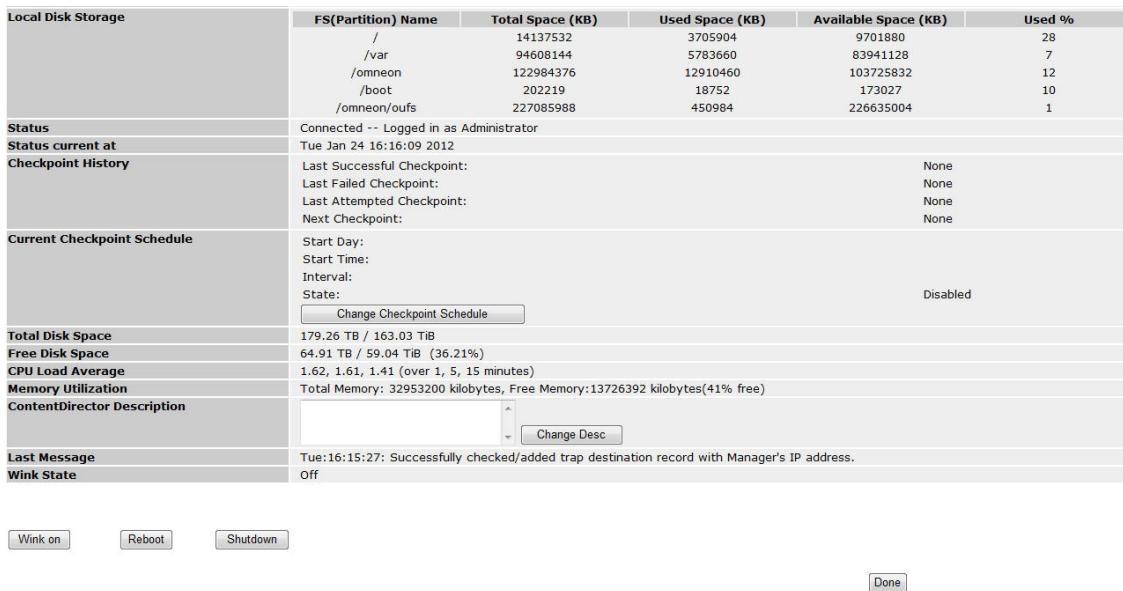


Figure 16–26: ContentDirector Properties (Lower Section)

The following properties are displayed in the lower section of the page ([Figure 16–26](#)).

- **Local Disk Storage**
  - **FS (Partition) Name:** The name of the local file system.
  - **Total Space (KB):** The total local storage space.
  - **Used Space (KB):** The amount of local storage space used.
  - **Available Space (KB):** The amount of local space available.
  - **Used %:** The percentage of local storage space used.
- **Status:** Displays the current network status for the selected unit. This field is used primarily for diagnostic troubleshooting.
- **Status Current At:** Displays the most recent date and time that the page was refreshed. Note that the page is automatically refreshed every 30 seconds, unless configured otherwise.
- **Checkpoint History (ContentDirectors only):** Displays previous Checkpoint information and details for the next scheduled Checkpoint.
- **Current Checkpoint Schedule (ContentDirectors only):** Displays the configured Checkpoint schedule, if Checkpoint is enabled. Click **Change Checkpoint Schedule** to configure a new schedule. Refer to [Enabling and Configuring Checkpoint Schedules](#) for step by step instructions.



**NOTE:** The Checkpoint schedule feature is OFF by default.

- **Total Disk Space:** Displays the Total Disk Space available on the unit.
- **Free Disk Space:** Displays the amount of free disk space available on the unit.
- **CPU Load Average:** Displays the system load averages for the past 1, 5, and 15 minutes on the unit.
- **Memory Utilization:** Displays the total real memory, the available real memory, and the percentage of total free memory for the unit.

- **ContentDirector Description:** Displays a scrollable multi-line description of the unit. This field is useful for entering data that clarifies the specific unit's role in the Omneon MediaGrid. To change the description, click **Change Desc**.
- **Last Message:** Displays the last message (of any type) associated with the unit.
- **Wink State:** Displays the wink state of the unit's light bar, either On or Off. To change the Wink state, click the **Wink** button.
- **Wink on/off (button):** Click the Wink button to change the wink state of the ContentDirector light bar.
- **Reboot (button):** Click to restart the ContentDirector without removing the power supply. For more information, refer to *Powering Down or Restarting a Single ContentDirector*.
- **Shutdown (button):** Click to shut down the ContentDirector. For more information, refer to *Powering Down or Restarting a Single ContentDirector*.

The **Environment Data** section appears only for the High Performance ContentDirector 2000 and displays the following:

**SSD Lifetime:** Displays the percentage of wear of the solid-state drive (SSD). For a new SSD, this will be 0% and, over time, as the SSD wears out this value will increase. When the value reaches 95%, the SSD should be replaced.

The **Events** section displays the following information when an alarm event occurs:

- **Level:** Displays the assigned severity level for an alarm event associated with a unit.
- **Time:** Displays the date and time when the alarm event occurred.
- **Event:** Displays the event which triggered the alarm on the unit.
- **Info:** Provides information on each event.
- **Clear? (button):** Displays when the unit has an alarm condition. Resolve the cause of the alarm condition and then click Clear to clear the alarm within the unit.
- **Delete (button):** Display when the unit has an alarm condition. Click to delete the event from the list and clear that event's Alarm icon.

## Viewing Properties for ContentBridges

This section describes the properties pages for the ContentBridge and the High Bandwidth ContentBridge.

**To view various properties for ContentBridges:**

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentBridges** section, click the **Name** hyperlink for the required unit to access the **Properties** page.

ContentBridge Properties							
General Information:							
Name	CLB01139						
Cluster Name	mds8						
System Up Time	1:49:21.72						
Interface Information	Interface	eth0		eth1			
	IP Address	10.30.24.190		10.30.25.192			
	MAC Address	00 E0 81 5A 3D E5		00 E0 81 5A 3D E6			
	MTU	1500		1500			
Interface Statistics		eth0 Receive	eth0 Transmit	eth1 Receive			
	Transfer Rate	59.27 MB/s	132.94 MB/s	22.84 MB/s			
Interface Counters (since agent boot)	Octets	2037074689	195237161	790751519			
	Unicast Packets	9809574	9349008	4935841			
	Non Unicast Packets	0	0	0			
	Discards	0	0	0			
Process Monitoring	Errors	0	0	0			
	Process						
	ntpd						
	afpd						
	vsftpd						
	smbd						
	nmbd						
Mount Points	ommedia_remote_svc						
	ommedia_mon.sh						
State							
Running							
Running							
Running							
Running							
Running							
Running							
Running							
/mnt/10.35.92.103/FS							
/mnt/10.30.24.200/testfs							
/mnt/omfs/10.30.24.200/ftp/omfs/testfs							
/mnt/omfs/10.30.24.200/omneon/omfs/testfs							

Figure 16–27: ContentBridge Properties (Upper Section)

The following properties are displayed in the upper section of the page (Figure 16–27).

In the **General Information** section:

- **Name:** Displays the assigned name for the unit. Refer to the *Omneon MediaGrid Installation and Configuration Guide* for a discussion about naming conventions to follow.
- **Cluster Name:** Displays the name assigned to this cluster.
- **System Up Time:** Displays the time the unit has been “up and running” in days, hours, minutes, seconds, and fractions of seconds.
- **Interface Information**
  - **Interface:** Displays the available interfaces for the unit.
  - **IP Address:** Displays the IP address assigned to each unit’s interface.
  - **MAC Address:** Displays the unique hardware number for each unit’s interface.
  - **MTU:** Shows the maximum size of Ethernet packets. An MTU greater than 1500 bytes indicates that Jumbo Frames are enabled.
- **Interface Statistics: Transfer Rate:** Shows the receive and transmit rate for each interface.
- **Interface Counters (since agent boot):** Shows the raw interface counters for each interface since the SNMP agent was last booted.
  - **Process Monitoring**
    - **Process:** Displays the name of the process running on the ContentBridge. Refer to [Viewing Process Monitoring on ContentDirectors and ContentBridges](#) for more information.
    - **State:** Displays the current state of the process. The states are: Running, Stopped, or N.A (Not Applicable).

- **Mount Points:** Displays the physical location in the directory structure where a computer puts the files in a File System.

Status	Connected -- Error Alarm
Model Number	CLB1000
Serial Number	01139
CPU Load Average	1.54, 1.19, 0.73 (over 1, 5, 15 minutes)
Memory Utilization	Total Memory: 2074596 KB, Free Memory: 519920 KB (25% free)
Firmware Version	2.0-20080603
Status current at	Tue Jun 3 11:24:16 2008
ContentBridge Description	<div style="border: 1px solid #ccc; padding: 5px; height: 40px; width: 100%;"> <div style="border: 1px solid #ccc; width: 100%; height: 100%;"> </div> </div> <input type="button" value="Change Desc"/>
Last Message	Tue:11:23:52: Successfully checked/added trap destination record with Manager's IP address.
Wink State	Off

Figure 16–28: ContentBridge Properties (Lower Section)

The following properties are displayed in the lower section of the page ([Figure 16–28](#)):

- **Status:** Displays the current status of the process. States reported on include **Connected**, **Connected -- Error Alarm**, **Connected -- Warning Alarm**, or **Not Responding**.
- **Model Number:** Displays the Harmonic model number for the unit.
- **Serial Number:** Displays the manufacturer's serial number assigned to the unit.
- **CPU Load Average:** Displays the system load averages for the past 1, 5, and 15 minutes on the unit.
- **Memory Utilization:** Displays the total real memory, the available real memory, and the percentage of total free memory for the unit.
- **Firmware Version:** Displays the version of firmware that resides in the unit's memory.
- **Status Current At:** Displays the most recent date and time that the page was refreshed. Note that the page is automatically refreshed every 30 seconds, unless configured otherwise.
- **ContentBridge Description:** Displays a scrollable multi-line description of the unit. This field is useful for entering data that identifies the specific unit's role in the Omneon MediaGrid. Click **Change Desc** to edit the description.
- **Last Message:** Displays the last message (of any type) associated with the unit.
- **Wink State:** Displays the wink state of the unit's light bar, either **On** or **Off**.

In the **Environment** section:

- **3.3V Line through 5.0V Line:** Displays the combined voltages present on the power supply's outputs. The values are displayed in volts. The valid range is also displayed. Note that this range is not user configurable and voltage lines vary according across ContentBridge models.
- **CPU Temperature:** Displays the ambient temperature of air entering the ContentBridge. The value is always displayed in degrees centigrade. The valid range is also displayed. Note that this range is not user configurable.
- **Motherboard Temperature:** Displays the temperature of the air above the ContentBridge's motherboard. The value is always displayed in degrees centigrade. The valid range is also displayed. Note that this range is not user configurable.
- **Fan 1 through Fan 6:** Displays the speed (in RPM) of each of the ContentBridge's fans. The valid range is also displayed. Note that this range is not user configurable.
- **SMART Errors:** Displays the number of SMART Errors associated with each disk drive.

- **Wink on/off (button):** Click the **Wink** button to change the wink state of the ContentBridge light bar.
- **Reboot (button):** Click to restart the ContentBridge without removing the power supply. For more information, refer to *Powering Down or Restarting a Single ContentBridge*.
- **Shutdown (button):** Click to shut down the ContentBridge. For more information, refer to *Powering Down or Restarting a Single ContentBridge*.

The **Events** section displays the following information when an alarm event occurs:

- **Level:** Displays the assigned severity level for an alarm event associated with a unit.
- **Time:** Displays the date and time when the alarm event occurred.
- **Event:** Displays the event which triggered the alarm on the unit.
- **Info:** Provides information on each event.
- **Clear? (button):** Displays when the unit has an alarm condition. Resolve the cause of the alarm condition and then click **Clear** to clear the alarm within the unit.
- **Delete (button):** Display when the unit has an alarm condition. Click to delete the event from the list and clear that event's Alarm icon.

## Viewing Properties for Network Switches

To view various properties for Network Switches:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Network Switches** sections, click the **IP Address** hyperlink for the required unit to access the **Properties** page (*Figure 16-29*).

**Network Switch Properties**

**General Information:**

IP Address	10.30.0.1																				
System Up Time	183 days, 1:18:03.23																				
Hardware Model	CNS-5412																				
Vendor Model Number	ProCurve 5412zl Intelligent Edge																				
Description	7RU Switch with Dual Power Supply																				
Firmware Version	ProCurve J8698A Switch 5412zl, revision K.12.02, ROM K.11.03 (/sw/code/build/btm(t2a))																				
Interface Information	<table border="1"> <thead> <tr><th>Interface</th><th>IP Address</th><th>MAC Address</th><th>MTU</th></tr> </thead> <tbody> <tr><td>MDS3_0</td><td>10.30.0.1</td><td>00 18 71 CA 47 00</td><td>9198 (Jumbo Frames)</td></tr> <tr><td>MDS3_1</td><td>10.30.4.1</td><td>00 18 71 CA 47 00</td><td>9198 (Jumbo Frames)</td></tr> <tr><td>Client0</td><td>10.30.8.1</td><td>00 18 71 CA 47 00</td><td>9198 (Jumbo Frames)</td></tr> <tr><td>Client1</td><td>10.30.9.1</td><td>00 18 71 CA 47 00</td><td>9198 (Jumbo Frames)</td></tr> </tbody> </table>	Interface	IP Address	MAC Address	MTU	MDS3_0	10.30.0.1	00 18 71 CA 47 00	9198 (Jumbo Frames)	MDS3_1	10.30.4.1	00 18 71 CA 47 00	9198 (Jumbo Frames)	Client0	10.30.8.1	00 18 71 CA 47 00	9198 (Jumbo Frames)	Client1	10.30.9.1	00 18 71 CA 47 00	9198 (Jumbo Frames)
Interface	IP Address	MAC Address	MTU																		
MDS3_0	10.30.0.1	00 18 71 CA 47 00	9198 (Jumbo Frames)																		
MDS3_1	10.30.4.1	00 18 71 CA 47 00	9198 (Jumbo Frames)																		
Client0	10.30.8.1	00 18 71 CA 47 00	9198 (Jumbo Frames)																		
Client1	10.30.9.1	00 18 71 CA 47 00	9198 (Jumbo Frames)																		
Status	Connected																				
Status current at	Tue Jun 3 11:26:19 2008																				
Last Message																					

**Done**

**Events**  
 You may clear the listed alarms by clicking this button: **Clear All**  
 You may delete the listed alarms by clicking this button: **Delete All**

Level	Time	Event	Info	Clear?	Delete
INFO	Thu May 29 16:02:29 2008	Device added to network. Type 12, ID 546		<b>Clear</b>	<b>Delete</b>

Refresh Interval for this page is 30 seconds.

**Figure 16–29: Network Switch Properties**

The following properties are displayed:

In the **General Information** section:

- **Name:** Displays the assigned name for the unit. Refer to the *Omneon MediaGrid Installation and Configuration Guide* for a discussion about naming conventions to follow.
- **IP Address:** Shows the assigned IP address for the unit.
- **System Up Time:** Displays the time the unit has been “up and running” in days, hours, minutes, seconds, and fractions of seconds.
- **Hardware Model:** Displays the unit’s model number.
- **Vendor Model Number:** Displays the vendor name and model number.
- **Description:** Displays a scrollable multi-line description of the unit. This field is useful for entering data that clarifies the specific unit’s role in the Omneon MediaGrid.
- **Firmware Version:** Displays the version of firmware that resides in the unit’s memory.
- **Interface Information**
  - **Interface:** Displays the available interfaces for the unit.
  - **IP Address:** Displays the IP address assigned to each unit’s interface.
  - **MAC Address:** Displays the unique hardware number for each unit’s interface.
  - **MTU:** Shows the maximum size of Ethernet packets. An MTU greater than 1500 bytes indicates that Jumbo Frames are enabled.
- **Status:** Displays the current network status for the selected unit. This field is used primarily for diagnostic troubleshooting.

- **Status Current At:** Displays the most recent date and time that the page was refreshed. Note that the page is automatically refreshed every 30 seconds, unless configured otherwise.
- **Last Message:** Displays the last message (of any type) associated with the unit.

The **Events** section displays the following information when an alarm event occurs:

- **Level:** Displays the assigned severity level for an alarm event associated with a unit.
- **Time:** Displays the date and time when the alarm event occurred.
- **Event:** Displays the event which triggered the alarm on the unit.
- **Info:** Provides information on each event.
- **Clear? (button):** Displays when the unit has an alarm condition. Resolve the cause of the alarm condition and then click Clear to clear the alarm within the unit.
- **Delete (button):** Display when the unit has an alarm condition. Click to delete the event from the list and clear that event's Alarm icon.

## Viewing Statistics for Clients in Clusters

The Client Statistics page enables the SystemManager to list all clients connected to a Omneon MediaGrid, and provides a snapshot of the current bandwidth usage on a per-client basis.



**NOTE:** Client Statistics shows metrics over a variable time interval. The default time interval is two minutes, and the metrics show the rates over that period only. In some situations, the general monitoring loop may be longer, which could make Client Statistics cover four minutes or longer. This can occur in large Omneon MediaGrid systems with many down devices.

### To view statistics for clients:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** sections, click the **Name** hyperlink for the required cluster to access the **Properties** page.
3. Click **View Client Statistics** to access the **Client Statistics** page, a sample is displayed in *Figure 16-30*.

Client Statistics for Cluster mds8														
Client Name	Client IP Address	Client Port	Client Type	Client Version	ContentDirector	User Name	Received	Transmitted	Received in Error	Transmitted in Error	Receive Timeouts	Transmit Timeouts	Connection Errors with ContentDirector	Connection Errors with ContentServers
CLB01139;/10.30.24.200/testfs	10.30.24.190	38915	Linux 2.6.18-rhel5	FSD 2.0	mds8-1	omneon	29207.92 KB/s	27762.98 KB/s	0 B/s	0 B/s	0 B/s	0 B/s	0 per min	0 per min

= indicates stale data.

Refresh Done

Refresh interval for this page is 2 minutes.

**Figure 16-30: Client Statistics**

The following data is displayed for all clients connected to all ContentServers in a cluster:

- **Client Name:** Shows the name assigned to the client.
- **Client IP Address:** Shows the IP address of the client communicating with the ContentDirector.

- **Client Port:** Shows the client's source port. This field is filled in by the ContentDirector (by querying the RPC transport for the client's source port).
- **Client Type:** Shows the OS type running on the client.
- **Client Version:** Shows the OS version running on the client.
- **ContentDirector:** Shows the name of the ContentDirector.
- **User Name:** Shows the name of the user authenticated with this session.

The remaining fields show the delta values for the last five minutes of sampling:

- **Received:** Shows the data received from the client.
- **Transmitted:** Shows the data transmitted to the client.
- **Received in Error:** Shows the number of bytes received which contained an error.
- **Transmitted in Error:** Shows the number of bytes transmitted which contained an error.
- **Transmit Timeouts:** Shows the number of timeouts which occurred.
- **Connection Errors with ContentDirector:** Shows the number of connection errors during the connection process.
- **Connection Errors with ContentServer:** Shows the number of connection errors during the connection process.

## Viewing Grid Applications



**NOTE:** You must have Administrator privileges to perform this function.



**NOTE:** This section applies only to systems with ContentServers 1000 or 2000 series.

### To view Grid applications:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** sections, click the **Name** hyperlink for the required cluster to access the **Properties** page.
3. Click **View Grid Applications** to access the **Grid Applications** page, a sample is displayed in [Figure 16-31](#).

The screenshot shows the 'Grid Applications - System View' interface. At the top, it displays 'Grid Applications in Cluster CLUSTER System View'. Below this, there's a summary table with the following data:

Number of Applications	1
Number of SubGrids	1
Number of Nodes in Use	12
Number of Nodes Available	0

Under the 'Applications' section, there is one entry:

Application Name	Status	#Nodes	#SubGrids
<a href="#">omtranscode</a>	Running	12	1

In the 'Compute Node Licenses' section, there is one entry:

License Name	#Nodes	Expired?	Date of Expiry (yyyy-mm-dd)
cld8	200	No	2106-02-06

Under 'License Limits', there is one entry:

SubGrid Count	SubGrid Size	Node Count	Lifespan (secs)
Unlimited	200	200	Unlimited

A 'Done' button is located at the bottom right of the main content area.

Figure 16–31: Grid Applications – System View

Data is displayed as follows:

In the **System View** section:

- **Number of Applications:** Shows the number of Harmonic-approved licensed applications running on the cluster.
- **Number of Sub Grids:** Shows the number of sub grids on which the applications are running.
- **Number of Nodes in Use:** Shows the number of nodes in use for the application.
- **Number of Nodes Available:** Shows the number of nodes that are not in use in the cluster.

In the **Applications** section:

- **Application Name:** Shows the name of the application. If the application is running, then a hyperlink will appear, which links to the **Application View** page. See [Figure 16–32](#).
- **Status:** Shows the status of the application, either “**Running**” or “**Not Running**.” If the application is running, then a hyperlink appears which opens the **Application View** page. This page displays the nodes on which the application is running.
- **#Nodes:** Shows the number of nodes used in the application.
- **#Sub Grids:** Shows the number of sub grids used in the application.

In the **Compute Node License** section:

- **License Name:** Shows the name of the license installed on the system.
- **#Nodes:** Shows the number of nodes that are licensed to use.
- **Expired?:** Indicates if the license has expired. The options are “**Yes**” or “**No**.”
- **Date of Expiry (yyyy-mm-dd):** Shows the date on which the license expired.

In the **License Limits** section:

- **Grid Count:** Shows the maximum number of grids that can be allocated for use at any one time.
- **Grid Size:** Shows the maximum number of nodes on the grid.
- **Node Count:** Shows the maximum number of nodes that can be allocated at any one time.
- **Lifespan:** Shows the maximum number of seconds allowed for any grid (in seconds).

The screenshot shows the 'Grid Applications - Application View' interface. At the top, there's a header bar with the title 'Grid Applications - Application View'. Below it, a sub-header says 'Grid Application omtranscode in Cluster CLUSTER'. The main content area has two sections: a summary table and a detailed table.

Application Name	omtranscode
Number of SubGrids	1
Number of Nodes in Use	12

SubGrid 0 Nodes											
Node Name	Node Id	Status	CPU Load Average			Memory Utilization					
CSS02073	0	Connected	0.14, 0.14, 0.09	(over 1, 5, 15 minutes)	Total Memory: 2074968 KB, Free Memory: 901888 KB (43% free)						
CSS02159	1	Connected	0.10, 0.13, 0.09	(over 1, 5, 15 minutes)	Total Memory: 2074968 KB, Free Memory: 402028 KB (19% free)						
CSS02129	2	Connected	0.14, 0.11, 0.09	(over 1, 5, 15 minutes)	Total Memory: 2074968 KB, Free Memory: 91572 KB (4% free)						
CSS02211	3	Connected	0.10, 0.15, 0.09	(over 1, 5, 15 minutes)	Total Memory: 2074968 KB, Free Memory: 159440 KB (7% free)						
CSS02076	5	Connected	0.20, 0.13, 0.10	(over 1, 5, 15 minutes)	Total Memory: 2074968 KB, Free Memory: 734032 KB (35% free)						
CSS02122	6	Connected	0.22, 0.16, 0.10	(over 1, 5, 15 minutes)	Total Memory: 2074968 KB, Free Memory: 1220136 KB (58% free)						
CSS02110	7	Connected -- Error Alarm	0.15, 0.10, 0.09	(over 1, 5, 15 minutes)	Total Memory: 2074968 KB, Free Memory: 1107632 KB (53% free)						
CSS02100	4	Connected	0.18, 0.18, 0.12	(over 1, 5, 15 minutes)	Total Memory: 2074968 KB, Free Memory: 798888 KB (38% free)						
CSS02109	8	Connected	0.18, 0.14, 0.10	(over 1, 5, 15 minutes)	Total Memory: 2074968 KB, Free Memory: 812484 KB (39% free)						
CSS02231	9	Connected	0.16, 0.11, 0.02	(over 1, 5, 15 minutes)	Total Memory: 2074588 KB, Free Memory: 67716 KB (3% free)						
CSS02149	10	Connected	0.15, 0.13, 0.09	(over 1, 5, 15 minutes)	Total Memory: 2074968 KB, Free Memory: 1056144 KB (50% free)						
CSS01856	11	Connected	0.11, 0.06, 0.01	(over 1, 5, 15 minutes)	Total Memory: 2074588 KB, Free Memory: 553772 KB (26% free)						

Figure 16–32: Grid Applications – Application View

In the **Application View** page the following information is available:

- **Application Name:** Shows the name of the application.
- **Number of Sub Grids:** Shows the number of sub grids on which the application is running.
- **Number of Nodes in Use:** Shows the number of nodes in use for the application.

The **SubGrid Nodes** section displays the following:

- **Node Name:** Shows the name of the ContentServer.
- **Node ID:** Shows the Node ID of the ContentServer.
- **Status:** Shows the status of the connection to each ContentServer.
- **CPU Load Average:** Displays the system load averages for the past 1, 5, and 15 minutes on the unit.
- **Memory Utilization:** Displays the total real memory, the available real memory, and the percentage of total free memory for the unit

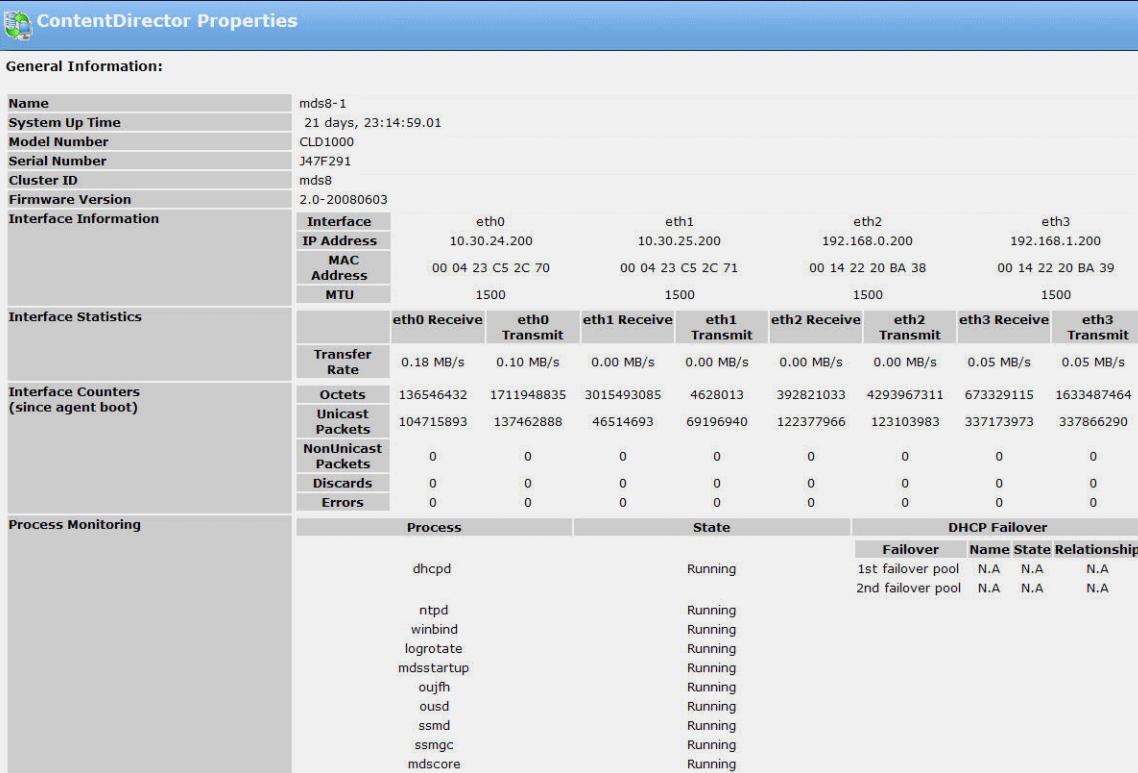
4. Click **Done** to return to the **Cluster Properties** page.

## Viewing Process Monitoring on ContentDirectors and ContentBridges

To view process monitoring:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.

2. Click the hyperlink for the required **ContentDirector** or **ContentBridge** to access their Properties page (*Figure 16–33*).



**ContentDirector Properties**

**General Information:**

Name	mds8-1
System Up Time	21 days, 23:14:59.01
Model Number	CLD1000
Serial Number	J47F291
Cluster ID	mds8
Firmware Version	2.0-20080603

**Interface Information**

Interface	eth0	eth1	eth2	eth3
IP Address	10.30.24.200	10.30.25.200	192.168.0.200	192.168.1.200
MAC Address	00 04 23 C5 2C 70	00 04 23 C5 2C 71	00 14 22 20 BA 38	00 14 22 20 BA 39
MTU	1500	1500	1500	1500

**Interface Statistics**

	eth0 Receive	eth0 Transmit	eth1 Receive	eth1 Transmit	eth2 Receive	eth2 Transmit	eth3 Receive	eth3 Transmit
Transfer Rate	0.18 MB/s	0.10 MB/s	0.00 MB/s	0.00 MB/s	0.00 MB/s	0.00 MB/s	0.05 MB/s	0.05 MB/s

**Interface Counters (since agent boot)**

	Octets	Unicast Packets	NonUnicast Packets	Discards	Errors
Octets	136546432	1711948835	3015493085	4628013	392821033
Unicast Packets	104715893	137462888	46514693	69196940	122377966
NonUnicast Packets	0	0	0	0	0
Discards	0	0	0	0	0
Errors	0	0	0	0	0

**Process Monitoring**

Process	State	DHCP Failover			
		Failover	Name	State	Relationship
dhcpd	Running	1st failover pool	N.A.	N.A.	N.A.
ntpd	Running	2nd failover pool	N.A.	N.A.	N.A.
winbind	Running				
logrotate	Running				
mdsstartup	Running				
oufh	Running				
ousd	Running				
ssmd	Running				
ssmgc	Running				
mdscore	Running				

**Figure 16–33: ContentDirector Properties**

View the following data for process monitoring on ContentDirectors:

- **Process Monitoring:**
- **Process:** Displays the name of the process running on the ContentDirector.
- **State:** Displays the current state of the process running on the ContentDirector. The states are: Running, Stopped, or N.A (Not Applicable).
- **DHCP Failover**
  - **Failover:** Identifies the failover pool.
  - **Name:** Displays the name of the failover pool.
  - **State:** Displays the state of the DHCP server in the first or second pool of addresses. The states are:
    - Partner Down
    - Normal
    - Communications Interrupted
    - Resolution Interrupted
    - Potential Conflict
    - Recover
    - Recover Done
    - Shutdown

- Paused
- Startup
- Recover Wait
- Relationship:** Displays the relationship of the server to the first or second pool of addresses. Primary indicates that the DHCP server is configured to provide primary service to the set of DHCP clients for a particular set of subnet address pools. Secondary indicates that the DHCP server is configured to act as backup to the primary server for a particular set of subnet address pools.

The screenshot shows the 'ContentBridge Properties' window with the 'General Information' tab selected. It displays various system parameters and network statistics.

Name	CLB01139																														
Cluster ID	mds8																														
System Up Time	1:49:21.72																														
<b>Interface Information</b>	<table border="1"> <thead> <tr> <th>Interface</th> <th>eth0</th> <th>eth1</th> </tr> </thead> <tbody> <tr> <td>IP Address</td> <td>10.30.24.190</td> <td>10.30.25.192</td> </tr> <tr> <td>MAC Address</td> <td>00 E0 81 5A 3D E5</td> <td>00 E0 81 5A 3D E6</td> </tr> <tr> <td>MTU</td> <td>1500</td> <td>1500</td> </tr> </tbody> </table>	Interface	eth0	eth1	IP Address	10.30.24.190	10.30.25.192	MAC Address	00 E0 81 5A 3D E5	00 E0 81 5A 3D E6	MTU	1500	1500																		
Interface	eth0	eth1																													
IP Address	10.30.24.190	10.30.25.192																													
MAC Address	00 E0 81 5A 3D E5	00 E0 81 5A 3D E6																													
MTU	1500	1500																													
<b>Interface Statistics</b>	<table border="1"> <thead> <tr> <th>Transfer Rate</th> <th>eth0 Receive</th> <th>eth0 Transmit</th> <th>eth1 Receive</th> <th>eth1 Transmit</th> </tr> </thead> <tbody> <tr> <td>Octets</td> <td>59.27 MB/s</td> <td>132.94 MB/s</td> <td>22.84 MB/s</td> <td>26.66 MB/s</td> </tr> <tr> <td>Unicast Packets</td> <td>2037074689</td> <td>195237161</td> <td>790751519</td> <td>2666053110</td> </tr> <tr> <td>Non Unicast Packets</td> <td>9809574</td> <td>9349008</td> <td>4935841</td> <td>5973816</td> </tr> <tr> <td>Discards</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Errors</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table>	Transfer Rate	eth0 Receive	eth0 Transmit	eth1 Receive	eth1 Transmit	Octets	59.27 MB/s	132.94 MB/s	22.84 MB/s	26.66 MB/s	Unicast Packets	2037074689	195237161	790751519	2666053110	Non Unicast Packets	9809574	9349008	4935841	5973816	Discards	0	0	0	0	Errors	0	0	0	0
Transfer Rate	eth0 Receive	eth0 Transmit	eth1 Receive	eth1 Transmit																											
Octets	59.27 MB/s	132.94 MB/s	22.84 MB/s	26.66 MB/s																											
Unicast Packets	2037074689	195237161	790751519	2666053110																											
Non Unicast Packets	9809574	9349008	4935841	5973816																											
Discards	0	0	0	0																											
Errors	0	0	0	0																											
<b>Process Monitoring</b>	<table border="1"> <thead> <tr> <th>Process</th> <th>State</th> </tr> </thead> <tbody> <tr> <td>ntpd</td> <td>Running</td> </tr> <tr> <td>afpd</td> <td>Running</td> </tr> <tr> <td>vsftpd</td> <td>Running</td> </tr> <tr> <td>smbd</td> <td>Running</td> </tr> <tr> <td>nmbd</td> <td>Running</td> </tr> <tr> <td>ommedia_remote_svc</td> <td>Running</td> </tr> <tr> <td>ommedia_mon.sh</td> <td>Running</td> </tr> </tbody> </table>	Process	State	ntpd	Running	afpd	Running	vsftpd	Running	smbd	Running	nmbd	Running	ommedia_remote_svc	Running	ommedia_mon.sh	Running														
Process	State																														
ntpd	Running																														
afpd	Running																														
vsftpd	Running																														
smbd	Running																														
nmbd	Running																														
ommedia_remote_svc	Running																														
ommedia_mon.sh	Running																														
<b>Mount Points</b>	<table border="1"> <tbody> <tr> <td>/mnt/10.35.92.103/FS</td> </tr> <tr> <td>/mnt/10.30.24.200/testfs</td> </tr> <tr> <td>/mnt/omfs/10.30.24.200/ftp/omfs/testfs</td> </tr> <tr> <td>/mnt/omfs/10.30.24.200/omneon/omfs/testfs</td> </tr> </tbody> </table>	/mnt/10.35.92.103/FS	/mnt/10.30.24.200/testfs	/mnt/omfs/10.30.24.200/ftp/omfs/testfs	/mnt/omfs/10.30.24.200/omneon/omfs/testfs																										
/mnt/10.35.92.103/FS																															
/mnt/10.30.24.200/testfs																															
/mnt/omfs/10.30.24.200/ftp/omfs/testfs																															
/mnt/omfs/10.30.24.200/omneon/omfs/testfs																															

Figure 16–34: Content Bridge Properties—General Information

View the following data for process monitoring on ContentBridges (Figure 16–34):

■ **Process Monitoring:**

- Process:** Displays the name of the process running on the ContentBridge
- State:** Displays the current state of the process. The states are: **Running**, **Stopped**, or **N.A (Not Applicable)**.

## Powering Down an Omneon MediaGrid System

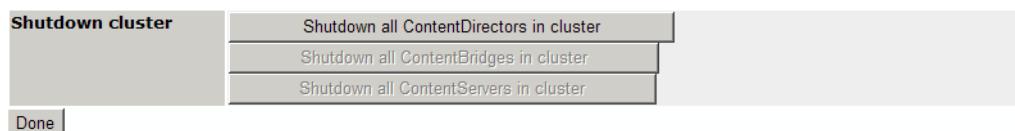


**IMPORTANT:** The following instructions only apply for systems running both SystemManager version 5.10 or later and Omneon MediaGrid version 2.1SR3 or later. If your version of SystemManager is earlier than 5.10 or if your version of Omneon MediaGrid is earlier than 2.1SR3, refer to "Shutting Down Omneon MediaGrid" in the *Omneon MediaGrid Installation and Configuration Guide*.

Use the following steps to safely power down the Omneon MediaGrid system. Only perform the following steps if directed by Technical Support. Refer to [Powering On an Omneon MediaGrid System](#) for the procedures to power on an Omneon MediaGrid system.

**To power down a Omneon MediaGrid system:**

1. In SystemManager, click the **Configuration** tab and then click the **Servers & Switches** icon in the left-hand column to access the **Servers & Switches** page.
2. Click the link for the Cluster that you wish to shut down. The **Cluster Properties** page appears.
3. From the **Cluster Properties** page, in the **Shutdown cluster** section, click **Shutdown all ContentDirectors in a Cluster** (see *Figure 16-35*).



**Figure 16-35: Shut down all ContentDirectors in a cluster**

4. A confirmation message appears. Click **OK**.
5. Scroll down to the **ContentDirectors** section of the page. Make sure the **Network Status** of the ContentDirectors indicates **Not Responding**. Note that it may take a few minutes for the status to change, depending on the length of the discovery cycle and the status of other devices in your network.
6. Disconnect the power cords from the ContentDirectors.

Once the ContentDirectors are shut down, the **Shutdown all ContentBridges in a Cluster** button will be activated.

7. Click **Shutdown all ContentBridges in a Cluster**. When the confirmation message appears, click **OK**.
8. Scroll down to the **ContentBridges** section of the page. Make sure the **Network Status** of the ContentBridges indicates **Not Responding**. Note that it may take a few minutes for the status to change, depending on the length of the discovery cycle and the status of other devices in your network.
9. Disconnect the power cords from the ContentBridges.

Once the ContentBridges are shut down, the **Shutdown all ContentServers in a Cluster** button will be activated.

10. Click **Shutdown all ContentServers in a Cluster**. When the confirmation message appears, click **OK**.
11. Scroll down to the **ContentServers/ContentStores** section of the page. Make sure the **Network Status** of the ContentServers indicates **Not Responding**. Note that it may take a few minutes for the status to change, depending on the length of the discovery cycle and the status of other devices in your network.
12. For ContentServers 1000 series and 2000 series, the LEDs on the front panel will repeatedly blink red, white, and then blue to indicate that it is safe to shut down. Power down the ContentServers as follows, depending on the model:
  - **ContentServer 1042 (1U)**—press the power switch on the back of the server to the OFF position. Disconnect the power cord from the back of the server.
  - **ContentServer 1242 (4U)**—disconnect all four of the power cords from the back of the server.
  - **ContentServer 2122/2124 (2U)**—disconnect the two power cords from the back of the server.

- **ContentServer 3000 (3U)**—press the red power button on the control panel on the front of the server and hold for five seconds. Once the disk drive LEDs are off, disconnect the two power cords from the back of the server.
  - **ContentStore 3160 (3U)**—press the red power button on the control panel on the front of the device and hold for five seconds. Once the disk drive LEDs are off, disconnect the two power cords from the back of the device.
13. From the SystemManager platform, click the **Start** button on the taskbar, and then click **Shutdown** to shut down the SystemManager platform. Disconnect the power cord if necessary.
  14. Power down the Network Switches by disconnecting the power cords.

## Powering Down or Restarting a Single ContentDirector

**To power down a single ContentDirector:**

1. From the **Configuration** tab, click the **Servers & Switches** icon in the left-hand column to open the **Servers & Switches** page.
2. In the **ContentDirectors** section, click the name of the ContentDirector you wish to power down. The **ContentDirector Properties** page appears.
3. Click the **Shutdown** button located at the bottom of the General Properties section.
4. When the confirmation message appears, click **OK**.
5. Check the **Status** field to verify that it indicates **Not Responding**. Note that this may take a few minutes depending on the length of the discovery cycle and the status of other devices in your network.
6. Disconnect the power supply.

**To restart a single ContentDirector without removing the power supply:**

1. From the ContentDirector Properties page, click the **Reboot** button located at the bottom of the General Properties section.
2. When the confirmation message appears, click **OK**. The ContentDirector will restart.
3. Check the **Status** field to verify that it changes to **Not Responding**, and then returns to its previous state. Note that it may take a few minutes for the status to change, depending on the length of the discovery cycle and the status of other devices in your network.

## Powering Down or Restarting a Single ContentBridge

**To power down a single ContentBridge:**

1. From the **Configuration** tab, click the **Servers & Switches** icon in the left-hand column to open the **Servers & Switches** page.
2. In the **ContentBridge** section, click the name of the ContentBridge you wish to power down. The **ContentBridge Properties** page appears.
3. Click the **Shutdown** button located at the bottom of the General Properties section.
4. When the confirmation message appears, click **OK**.
5. Check the **Status** field to verify that it indicates **Not Responding**. Note that it may take a few minutes for the status to change, depending on the length of the discovery cycle and the status of other devices in your network.
6. Disconnect the power supply.

**To restart a single ContentBridge without removing the power supply:**

1. From the ContentBridge Properties page, click the **Reboot** button located at the bottom of the General Properties section.
2. When the confirmation message appears, click **OK**. The ContentBridge will restart.
3. Check the **Status** field to verify that it changes to **Not Responding**, and then returns to its previous state. Note that it may take a few minutes for the status to change, depending on the length of the discovery cycle and the status of other devices in your network.

## Powering Down or Restarting a Single ContentServer 1000 Series or 2000 Series

**To power down a single ContentServer:**

1. From the **Configuration** tab, click the **Servers & Switches** icon in the left-hand column to open the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the name of the ContentServer you wish to power down. The **ContentServer Properties** page appears.
3. Click the **Shutdown** button located at the bottom of the General Properties section. For ContentServers with Omneon MediaGrid firmware version 2.1.1 or later, you can also use the **Shutdown** button located on the Cluster Properties page in the ContentServer section of the page (see [Viewing Properties for Clusters](#)).
4. When the confirmation message appears, click **OK**.
5. Check the **Status** field to verify that it indicates **Not Responding**. Note that it may take a few minutes for the status to change, depending on the length of the discovery cycle and the status of other devices in your network.
6. The LEDs on the front panel of a ContentServer will repeatedly blink red, white, and then blue to indicate that it is safe to shut down. Power down the ContentServers as follows, depending on the model:
  - a. **ContentServer 1042 (1U)**—press the power switch on the back of the server to the OFF position. Disconnect the power cord from the back of the server.
  - b. **ContentServer 2122/2124 (2U)**—disconnect the two power cords from the back of the server.

**To restart a single ContentServer without removing the power supply:**

1. From the ContentServer Properties page, click the **Reboot** button located at the bottom of the General Properties section.
2. When the confirmation message appears, click **OK**. The ContentServer will restart.
3. Check the **Status** field to verify that it changes to **Not Responding**, and then returns to its previous state. Note that it may take a few minutes for the status to change, depending on the length of the discovery cycle and the status of other devices in your network.

## Powering Down a Single ContentServer 3000 Series

**To power down a single ContentServer:**

1. From the **Configuration** tab, click the **Servers & Switches** icon in the left-hand column to open the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the name of the ContentServer you wish to power down. The **ContentServer Properties** page appears.

3. Click the **Shutdown All Enclosures** button to shut down both controllers on the ContentServer. Note that this also shuts down all managed ContentStores or ContentServers.
4. When the confirmation message appears, click **OK**.
5. Check the **Status** field for the ContentServer to verify that it indicates **Not Responding**. Note that it may take a few minutes for the status to change, depending on the length of the discovery cycle and the status of other devices in your network.
6. Press the red power button on the control panel on the front of the server and hold for five seconds. Once the disk drive LEDs are off, disconnect the two power cords from the back of the server.

### Powering Down a Single ContentServer 3000 Controller

**To power down a single ContentServer 3000 Controller:**

1. From the **Configuration** tab, click the **Servers & Switches** icon in the left-hand column to open the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the name of the ContentServer. The **ContentServer Properties** page appears.
3. From the **ContentServer Controllers** section, in the **Actions** row, click the **Shutdown** button for the controller you wish to shut down.
4. When the confirmation message appears, click **OK**.
5. Check the **Status** field for the controller to verify that it indicates **Not Responding**. Note that it may take a few minutes for the status to change, depending on the length of the discovery cycle and the status of other devices in your network.

### Powering Down a Single ContentStore

**To power down a single ContentStore:**

1. From the **Configuration** tab, click the **Servers & Switches** icon in the left-hand column to open the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the name of the ContentStore you wish to power down. The **ContentStore Properties** page appears.
3. Click the **Shutdown** button located in the top section of the page.
4. When the confirmation message appears, click **OK**.
5. Check the **Status** field to verify that it indicates **Not Responding**. Note that it may take a few minutes for the status to change, depending on the length of the discovery cycle and the status of other devices in your network.
6. Press the red power button on the control panel on the front of the device and hold for five seconds. Once the disk drive LEDs are off, disconnect the two power cords from the back of the device.

## Powering On an Omneon MediaGrid System

Use the following steps to power on the devices in an Omneon MediaGrid system.



**IMPORTANT:** The procedures must be followed in the order described below.

1. Apply power to the ContentDirectors by connecting both power cords to separate, isolated power sources.

2. Press the Power button on the front of each ContentDirector. The ContentDirectors take approximately five minutes to start. Wait for the power-on indicator to light before continuing.
3. Apply power to the ContentServers by connecting the power cords to power sources.
4. Turn on the ContentServers as follows:
  - For ContentServers 1000 Series and 2000 Series, press the Power switch on the back of the server.
  - For ContentServers 3000 Series, press the Power button on the control panel on the front of the server.
5. Apply power to the ContentStores by connecting the power cords to power sources.
6. Turn on the ContentStores by pressing the Power button on the control panel on the front of each ContentStore.
7. Apply power to the SystemManager by connecting the power cord to a power source. Press the Power button on the front of the SystemManager.
8. Apply power to the ContentBridge (if part of the system) by pressing the Power switch on the back of the device. Make sure all of the ContentServers are running before powering on the ContentBridge.

## Chapter 17

# Omneon MediaGrid RAID Configuration and Maintenance

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This chapter provides RAID set configuration and maintenance procedures for the ContentServer 3000 series and ContentStores. Choose from the following topics:

- [\*Supported RAID Configurations for the ContentServer 3000 and ContentStore 3160\*](#)
- [\*Creating a RAID Set\*](#)
- [\*Creating a RAID Set with Auto Create\*](#)
- [\*Viewing Drive Properties\*](#)
- [\*Viewing RAID Set Information\*](#)
- [\*Failing a Drive\*](#)
- [\*Unfailing a Drive\*](#)
- [\*Changing RAID set Wink State\*](#)
- [\*Stopping a RAID Set Rebuild in Progress\*](#)
- [\*Restarting a RAID set Rebuild\*](#)
- [\*Making a Hot Spare\*](#)
- [\*Clearing a Hot Spare\*](#)

## Supported RAID Configurations for the ContentServer 3000 and ContentStore 3160

*Table 17-1* shows the available disk drive configurations in the ContentServer 3000 and ContentStore 3160. Make sure to select the RAID set that works best for your needs.

**Table 17-1: RAID Configurations**

# Drives	RAID Sets	Capacity per Drive	Storage Capacity
16	2x(6+2)	500 GB	6 TB
16	2x(6+2)	1 TB	12 TB
16	2x(6+2)	2 TB	24 TB
16	2x(6+2)	3 TB	36 TB
16	5x(2+1)+1	500 GB	5 TB
16	5x(2+1)+1	1 TB	10 TB
16	5x(2+1)+1	2 TB	20 TB
16	5x(2+1)+1	3 TB	30 TB



**NOTE:** No other disk drive configurations are supported.

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## About the RAID 6+2 Configuration

In a 6+2 RAID set, the disk drives are configured in a Dual Parity (DP) RAID array, ensuring that the system can continue to function despite the failure of any two disk drives. This configuration optimizes storage capacity at the cost of bandwidth.

## About the RAID 2+1 Configuration

In a system configured with a (2+1)+1 RAID set, there is a single redundant disk drive with a hot spare. This configuration optimizes bandwidth at the cost of storage capacity.

# Creating a RAID Set



**NOTE:** This procedure can be performed automatically when you run the MediaGrid configuration assistant. For information about running the configuration assistant, refer to "System Configuration" in the *Omneon MediaGrid Installation and Configuration Guide*.

The Create RAID set utility allows you to manually assign drives to a RAID set.

### To create a RAID Set:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentServer or ContentStore to access the **Properties** page.
3. In the **Drives** section of the page, click **Create RAID Set** to open the Create RAID Set page, as shown in *Figure 17-1*.



**NOTE:** If the Create RAID Set button is grayed out, then all drives are already assigned to a RAID set.

Create new RAID set.						
Please select the disks to create a RAID Set.						
Drives						
Slot	Drive GUID	Model	Manufacturer	Fw Version	Status	Select
3	fe574443-4f0a0df6	WDC-WD1003FBYX-0	ATA	01.01V01	Alive	<input type="checkbox"/>
4	fe574443-19f88722	WDC-WD1003FBYX-0	ATA	01.01V01	Alive	<input type="checkbox"/>
5	fe574443-11cefda8	WDC-WD1003FBYX-0	ATA	01.01V01	Alive	<input type="checkbox"/>
9	fe574443-da522bb0	WDC-WD1003FBYX-0	ATA	01.01V01	Alive	<input type="checkbox"/>
10	fe574443-d5cc8540	WDC-WD1003FBYX-0	ATA	01.01V01	Alive	<input type="checkbox"/>
11	fe574443-cbba7018	WDC-WD1003FBYX-0	ATA	01.01V01	Alive	<input type="checkbox"/>
14	fe574443-a7529a99	WDC-WD1003FBYX-0	ATA	01.01V01	Alive	<input type="checkbox"/>

Please select a type for the new RAID set.

Select RAID Set Type

Single parity (2+1)

**Note:**  
Single parity RAID Set requires three drives(2+1) selection.  
Dual parity RAID Set requires eight drives(6+2) selection.

**Figure 17-1: Creating a RAID set Manually**

4. From the **Create RAID set** page, select the drives you wish to add to a RAID set.
5. In **Selected RAID Set Type**, select the desired RAID set type.



**NOTE:** Creating a single parity RAID set (2+1) requires three available drives. And creating a dual parity RAID set (6+2) requires eight available drives. If fewer than eight drives are available then SystemManager will only show the single parity option.

6. Click **Create RAID Set**.

The new RAID set will be visible in the RAID Sets section of the ContentServer or ContentStore Properties page.

## Creating a RAID Set with Auto Create



**NOTE:** This procedure can be performed automatically when you run the MediaGrid configuration assistant. For information about running the configuration assistant, refer to "System Configuration" in the *Omneon MediaGrid Installation and Configuration Guide*.

The Auto Create RAID set utility allows SystemManager to automatically assign drives to a RAID set.

### To auto create a RAID Set:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentServer or ContentStore to access the **Properties** page.
3. In the **Drives** section of the page, click **Auto Create RAID Set** to open the AutoCreate RAID Set page, as shown in *Figure 17-1*.



**NOTE:** If the Create RAID Set button is grayed out, then all drives are already assigned to a RAID set.



### Auto Create RAID Set

Please select a type for Auto Create RAID Set.

#### Select RAID Set Type

Single parity (2+1)

**Figure 17-2: Creating a RAID set with Auto Create**

4. In **Select RAID Set Type**, select the desired RAID set type.



**NOTE:** Creating a single parity RAID set (2+1) requires three available drives. And creating a dual parity RAID set (6+2) requires eight available drives. If fewer than eight drives are available then SystemManager will only show the single parity option.

5. Click **Done** to create the RAID set and return to the ContentServer or ContentStore Properties page.

The new RAID set will be visible in the RAID Sets section of the ContentServer or ContentStore Properties page.

## Viewing Drive Properties

On the **Drive Properties** page for a ContentServer 3000 or ContentStore drive, you can view general information about a specific drive as well as perform drive-related tasks.

### To view drive properties:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentServer or ContentStore to access the **Properties** page.
3. In the **Drives** section of the page, identify the drive you wish to view and then click the link in the **GUID** column. This opens the **Drive Properties** page, shown in *Figure 17-3*.

The screenshot shows the 'Omneon MediaGrid RAID Drive Properties' page for a drive with GUID fe574443-87d96282. The page is divided into three main sections: General Information, Disk Statistics, and Miscellaneous.

**General Information:**

Status	Alive
Last Message	WDC-WD2003FYYS-0
Model	ATA
Manufacturer	WD-WMAUR0303868
Firmware Rev. Level	01.00D02
Disk GUID	fe574443-87d96282

**Disk Statistics:**

Disk Size	2000 GB
SMART Errors	0
Hardware Errors	0
Bad Blocks	0
Read Errors	0
Write Errors	0
Read Timeouts	0
Write Timeouts	0
Blocks Repaired	0
Aggregate Errors	0

**Miscellaneous:**

RAID set	RaidSet242250 ( 82ed8e5d-baad5765 )
Position in RAID set	0

Buttons at the bottom include: Wink on, Wink off, Fail drive, Make Hot Spare, and Done.

**Figure 17-3: Viewing Drive Properties**

- **Status:** Lists the status of the drive:
  - **Alive:** The drive is available.
  - **Dead:** The drive is not responding.
  - **Missing:** The drive is not part of the system.
  - **Unavailable:** The drive is not currently available.

- Formatting:** The drive is being formatted.
  - Repairing:** The drive is being repaired.
  - Rebuilding:** The RAID set is being rebuilt.
  - Unknown:** SystemManager cannot identify the drive state.
  - Alive, Hot Spare:** The drive is available and assigned as a Hot Spare.
- **Last Message:** This line displays the last error message (generated by the SystemManager) relating to the drive.
- **Model:** Lists the model number of the drive.
- **Manufacturer:** Lists the name of the drive's manufacturer.
- **Serial Number:** Lists the serial number of the selected drive.
- **Firmware Rev. Level:** Lists the firmware revision level of the selected drive.
- **Disk GUID:** Lists the specific GUID (Global Unique Identifier) of the selected drive.

In the **Disk Statistics** section you can view:

- **Disk Size:** Shows the disk size (in GB) of the selected drive.
- **Block Size:** Displays the block size of the selected drive.
- **Blocks:** Shows the number of blocks on the selected drive.
- **SMART Errors:** Shows the number of SMART warnings. This value is not affected by bad block repairs. If this value is greater than zero, the SystemManager displays a Critical level alarm (red) and the drive should be replaced as soon as possible. Refer to [Note about Drive Errors](#) for additional information.
- **Hardware Errors:** Shows the number of hardware errors reported. This value is not affected by bad block repairs. If this value is greater than zero, the SystemManager displays a Critical level alarm (red) and the drive should be replaced as soon as possible. Refer to [Note about Drive Errors](#) for additional information.
- **Login Failures:** Shows the persistent number of login failures detected. This value is not affected by bad block repairs. If this value is greater than zero, the SystemManager displays a Failure level alarm (orange). Refer to [Note about Drive Errors](#) for additional information.
- **Bad Blocks:** Shows the total number of bad blocks. This value increases whenever a new bad block is detected and decreases when bad blocks are repaired. If this value is greater than zero, the SystemManager displays a Failure level alarm (orange).
- **Read Errors:** Shows the total number of read errors that have occurred on this drive. This number is not reset by repairing bad blocks, but is reset by reformatting the disk. If this value is greater than zero, the SystemManager displays a Failure level alarm (orange).
- **Write Errors:** Shows the total number of write errors that have occurred on this drive. This number is not reset by repairing bad blocks. If this value is greater than zero, the SystemManager displays a Failure level alarm (orange).
- **Read Timeouts:** Shows the total number of read timeouts that have occurred on this drive. This number is not reset by repairing bad blocks. If this value is greater than zero, the SystemManager displays a Failure level alarm (orange).

- **Write Timeouts:** Shows the total number of write timeouts that have occurred on this drive. This number is not reset by repairing bad blocks. If this value is greater than zero, the SystemManager displays a Failure level alarm (orange).
- **Blocks Repaired:** Shows the number of bad blocks that have been repaired. This number increases when bad blocks are repaired.
- **Aggregate Errors:** Shows the number of errors represented by the current bad block list. This number decreases if bad blocks are repaired.

In the **Miscellaneous** section you can view:

- **RAID set:** Click the **RAID Set** hyperlink to access the **RAID Utilities** page.
- **Position in RAID set:** Displays the location of the selected drive in relation to the RAID set. For example, if there are eight drives in a RAID set, the first drive would be in position 0 (zero).
- **Wink On** (button): Click to wink the drive.
- **Wink Off** (button): Click to turn off winking.
- **Fail Drive** (button): Click to remove the drive from the RAID set.
- **Make Hot Spare/Clear Hot Spare** (button): Click **Make Hot Spare** to assign the drive to be a Hot Spare. This changes the status of the drive to "Alive, Hot Spare." Note that when you make a hot spare, a new **Clear Hot Spare** button appears. Click **Clear Hot Spare** to clear the Hot Spare designation (for example, if you wish to use the selected drive as a normal part of a RAID set). For more information, refer to [Making a Hot Spare](#) and [Clearing a Hot Spare](#).
- **Done** (button): Click to save any changes and return to the ContentServer/ContentStore Properties page.

#### Note about Drive Errors

Drives which report SMART warnings, hardware errors, and some persistent login failures will be removed from the RAID set provided that: A. The RAID set has a hot spare, B. No other drives in the RAID set have bad blocks and C. The RAID set is not already compromised or in the process of rebuilding.

## Viewing RAID Set Information

On the **RAID Utilities** page you can view general information about a particular RAID set and also perform a variety of tasks including changing the RAID set's name, adding and removing drives from the RAID set, manually starting a "rebuild."

#### To view RAID set information:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentServer or ContentStore to access the **Properties** page.
3. In the **RAID sets** section of the page, click the link in the **GUID** column for the RAID set you wish to view. The **RAID Utilities** page appears, shown in [Figure 17-4](#).

The screenshot shows the RAID Utilities page for RaidSet1450. At the top, there's a header bar with the title "Omneon MediaGrid RAID utilities for RaidSet1450 on S0000EE681". Below the header is a table titled "Information" with the following data:

Name	RaidSet1450
Status	Normal: Online
Last Message	
Type	Single parity
Rebuild Status	Stopped, Online
GUID	8635053e-df1e5bde

Below the information table is another section titled "3 Drives in this RAID Set:" with three entries:

fe574443-4f0a0df6:00, ( <a href="#">WD-WCAV30019769</a> )	WDC-WD1003FBYX-0, Alive
fe574443-19f88722:01, ( <a href="#">WD-WCAV30020478</a> )	WDC-WD1003FBYX-0, Alive
fe574443-11cefda8:02, ( <a href="#">WD-WCAV30020729</a> )	WDC-WD1003FBYX-0, Alive

At the bottom of the page are several action buttons: Wink on, Wink off, Set Offline, Start Rebuild, Suspend Rebuild, Continue Rebuild, Abort Rebuild, and Done.

Figure 17–4: RAID Utilities Page

- **Name:** Displays the name of the RAID set.
- **Status:** Displays the current status of the selected RAID set.
- **Last Message:** This line displays the last error message (generated by the SystemManager) that deals with the selected RAID set.
- **Type:** Displays the RAID set type.
- **Rebuild Status:** Displays the status of the RAID set rebuild.
- **GUID:** Displays the GUID of the complete RAID set.
- **<X> Drives in this RAID Set:** Displays information on each drive in the RAID set. The left-hand column displays the GUID for each drive, and a link to the Drive Properties page for each
- **Wink On** (button): Click to wink all drives in the RAID set.
- **Wink Off** (button): Click to turn off winking for all drives in the RAID set.
- **Set Online/Offline** (button): Click to set the RAID set either online or offline. When the RAID set is offline, the drives cannot be accessed.
- **Start Rebuild** (button): Click to manually start a “rebuild” after a drive failure has occurred, or after a drive has been replaced. Refer to *Restarting a RAID set Rebuild* for instructions.
- **Suspend Rebuild** (button): Click to manually suspend a “rebuild” after the rebuild process has been started.
- **Continue Rebuild** (button): Click to manually continue a “rebuild” after the rebuild process has been suspended.
- **Abort Rebuild** (button): Click to manually abort a “rebuild” after the rebuild process has been started. Refer to *Stopping a RAID Set Rebuild in Progress* for instructions.
- **Done:** Click to save any changes on the **RAID Utilities** page and return to the ContentServer or ContentStore Properties page.

## Failing a Drive

Use this procedure to remove a drive from a RAID set, when the drive is experiencing a loss of data. This step is performed as a prerequisite to removing the drive from the chassis and then replacing it with a new drive, at which time the RAID set “rebuild” occurs automatically.

**To fail a drive:**

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentServer or ContentStore to access the **Properties** page.
3. In the **Drives** section of the page, select the drive(s) you wish to fail and click **Fail Drives**.

The drive status now appears as “**Dead**” and “**Unraided**.”

For instructions on replacing a failed drive, refer to “Replacing ContentServer 3000 Components” or “Replacing ContentStore Components” in the *Omneon MediaGrid Component Replacement Guide*.

## Unfailing a Drive

Use this procedure to make a failed drive available to be used in a RAID set.

**To unfail a drive:**

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentServer or ContentStore to access the **Properties** page.
3. In the **Drives** section of the page, select the drive(s) you wish to unfail and click **Unfail Drives**.

The drive status changes to “**Alive**.”

## Changing RAID set Wink State

**To change the wink state of all drives in a RAID set:**

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentServer or ContentStore to access the **Properties** page.
3. In the **RAID sets** section of the page, click the link in the GUID column for the RAID set you wish to view. The **RAID Utilities** page appears, shown in *Figure 17-4*.
4. In the **RAID Set drives wink state** section, click **Wink On** to wink all drives in the RAID set. Click **Wink Off** to turn off winking for all drives in the RAID set.

## Stopping a RAID Set Rebuild in Progress

Use this procedure to stop a RAID set “rebuild” in progress. Note that when the rebuild stops, the RAID set is left in a compromised state. In this state, the RAID set can still be used, but there is no protection. If another drive is lost, your content will also be lost.

The rebuild might be manually stopped, for example, if you noted that the rebuild was occurring to the wrong Hot Spare. Once stopped, the rebuild can be started again successfully.

**To stop a rebuild in progress:**

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentServer or ContentStore to access the **Properties** page.
3. In the **RAID sets** section of the page, click the link in the GUID column for the RAID set you wish to view. The **RAID Utilities** page appears, shown in *Figure 17-4*.
4. Scroll to the bottom of the page and click **Abort Rebuild**.
5. Verify that the Rebuild status field reads “**Aborted**.”

The rebuild has now been stopped, but it can be started again successfully. Refer to *Restarting a RAID set Rebuild* for details.

## Restarting a RAID set Rebuild

Normally, the rebuilding of a RAID set occurs automatically when a drive fails and a Hot Spare is available. The rebuild can also occur when a failed drive is replaced.

**To restart a RAID set rebuild:**

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentServer or ContentStore to access the **Properties** page.
3. In the **RAID sets** section of the page, click the link in the GUID column for the RAID set you wish to view. The **RAID Utilities** page appears, shown in *Figure 17-4*.
4. Scroll to the bottom and click **Start Rebuild**. The status field changes to “**Rebuilding**.”
5. Click **Done** to save the changes and return to the ContentServer or ContentStore Properties page.

## Making a Hot Spare

If a drive failure occurs and a hot spare is available, the system will automatically utilize a hot spare to rebuild a protected RAID set. A hot spare is a drive that will be used by the ContentServer or ContentStore to fulfill hot spare requirements for any RAID set in the ContentServer or ContentStore where the hot spare resides. If your system is configured with 2+1 RAID sets, Harmonic recommends that you always have at least one hot spare available.



**NOTE:** If you enable Monitor Hotspares (from the Options page on the Home tab), the SystemManager will raise an alarm (and send notification by e-mail and/or trap if so configured) when a RAID set is no longer protected with an available hot spare.

**To configure a drive as a hot spare:**

1. Verify the hot spare drive’s condition. From the **ContentServer/ContentStore Properties** page, in the **Drives** section on the page, the drive should appear as “**Alive**” and “**Unraided**.” If the drive does not appear this way, contact Technical Support.
2. Verify the drive’s firmware. If the firmware revision level does not match the other drives, contact Technical Support for assistance.
3. From the **ContentServer/ContentStore Properties** page, in the **Drives** section on the page, click the GUID for the selected drive to display the **Drive Properties** page.

4. From the **Drive Properties** page, click **Make Hot Spare**. The button changes to **Clear Hot Spare**, the drive's status changes immediately to "Alive, Hot Spare," and the drive is ready for use as a hot spare.
5. Click **Done** to save the changes and return to the ContentServer or ContentStore Properties page.

## Clearing a Hot Spare

You can clear a **Hot Spare**, for example, if you accidentally created a Hot Spare or if you want to use the selected drive as a normal part of a RAID set.

### To clear a hot spare:

1. From the **ContentServer/ContentStore Properties** page, in the **Drives** section on the page, click the GUID for the selected drive to display the **Drive Properties** page.
2. From the **Drive Properties** page, click **Clear Hot Spare**. The button changes to **Make Hot Spare**, the drive's status changes immediately to "Alive," and the drive is ready for use as normal drive.
3. Click **Done** to save the changes and return to the ContentServer or ContentStore Properties page.

# Chapter 18

## Omneon MediaGrid Advanced Configuration

This chapter provides advanced configuration procedures for Omneon MediaGrid. Choose from the following topics:

- [Editing the Slice Size Configuration File](#)
- [Editing the ContentServer Configuration File](#)
- [Editing the ContentBridge Configuration File](#)
- [Editing the High Bandwidth ContentBridge Configuration File](#)
- [Enabling and Configuring Scheduled Balancing](#)
- [Enabling and Configuring Log Forwarding](#)
- [Balancing the ContentServer 3000 Controllers](#)
- [Upgrading Omneon MediaGrid Firmware](#)
- [Changing the Wink State on Omneon MediaGrid Components, Clusters, Volumes, and Groups](#)
- [Enabling and Configuring Checkpoint Schedules](#)
- [Changing the Descriptions for Omneon MediaGrid Components](#)
- [Viewing and Clearing Alarms and Events for Omneon MediaGrid Components](#)
- [Performing Management and Troubleshooting on an Omneon MediaGrid](#)

Refer to the *Omneon MediaGrid Installation and Configuration Guide* for detailed instructions on installing an Omneon MediaGrid.

### Editing the Slice Size Configuration File

**IMPORTANT:** As the final step in replacing a ContentDirector, review this configuration file to ensure it contains the latest settings. Click **Save** to save the file on the new ContentDirector. Refer to the *Omneon MediaGrid Component Replacement Guide* and the product release notes for complete replacement instructions.

**IMPORTANT:** Do not edit the Slice Size configuration file without assistance from [Technical Support](#).

#### To edit the slice size configuration file:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** sections, click the **Name** hyperlink for the required cluster to access the **Properties** page.
3. Click **View/Edit Slice Size Config** to access the **Edit “sliceSizeSpec” File** page (see [Figure 18-1](#)). Note that the View/Edit Slice Size button is only enabled if you are logged in as Administrator.

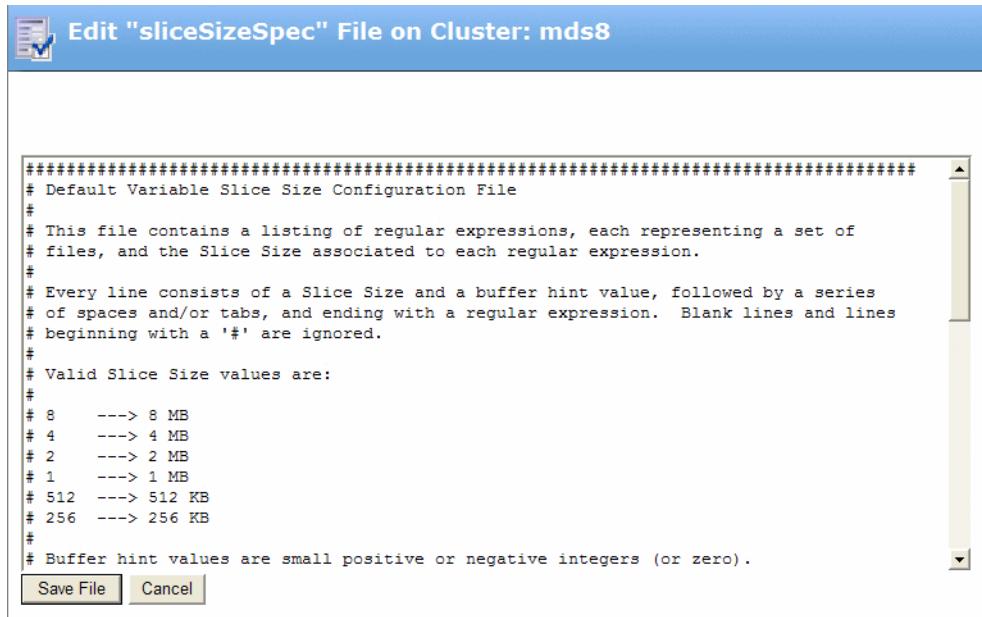


Figure 18-1: Edit "sliceSizeSpec" File



**NOTE:** If one or more ContentDirectors go offline, the Slice Size configuration file is automatically synchronized for you when the ContentDirectors comes back online. No additional steps are necessary to synchronize the configuration file.

## Editing the ContentServer Configuration File

The ContentServer configuration file can be edited to set time zones, enable jumbo frames and other options, as described below.



**IMPORTANT:** As the final step in replacing a ContentDirector, review this configuration file to ensure it contains the latest settings generated by the Configuration Assistant. Click **Save** to save the file on the new ContentDirector. Refer to the *Omneon MediaGrid Component Replacement Guide* and the product release notes for complete replacement instructions.



**NOTE:** If you make manual edits to this configuration file, you must save the file on every ContentDirector in the cluster.

### To edit the ContentServer configuration file:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** sections, click the **Name** hyperlink for the required cluster to access the **Properties** page.
3. Click **View/Edit ContentServer Config** to access the **Edit ContentServer Config File** page, a sample is displayed in [Figure 18-2](#).



**Figure 18–2: Edit ContentServer Config File**

4. If the config file does not exist, do the following:
  - a. Start an SSH session to the ContentDirector.
  - b. Create the directory and file by typing:  
sudo vi /tftpboot/config/config

Set each field as follows:

```
LOGHOST=172.16.1.200
REBOOT_ON_PANIC=YES
SLICED_WATCHDOG=YES
SLICED_LOGLEVEL=err
ENABLE_JUMBO_SERVER=NO
ENABLE_JUMBO_BRIDGE=NO
```

#### **ContentServer 1000/2000 Series Parameters:**

The configuration file for the ContentServer 1000 series and ContentServer 2000 series contains the following parameters:

- LOGHOST is the IP address of the log host
- REBOOT\_ON\_PANIC will set the ContentServers to reboot 60 seconds after a kernel panic. This should be set to YES.

- SLICED\_WATCHDOG loads a kernel module that reboots the ContentServer if it stops working. This should be set to YES.
- SLICED\_LOGLEVEL determines how verbose logs should be. Acceptable options are: all, info, warn, err.
- SLICE\_TIMEZONE determines the time zone for your location. Refer to [Step 5](#) for more information.
- ENABLE\_JUMBO\_SERVER=NO determines the MTU (maximum transmission unit) size used on the ContentServer. This option uses an MTU size of 1500. Set this field to YES to enable jumbo frames. The MTU size for Omneon MediaGrid with jumbo frames enabled is 9000.
- ENABLE\_JUMBO\_BRIDGE=NO determines the MTU size used on the ContentBridge. This option uses an MTU size of 1500. Set this field to YES to enable jumbo frames. The MTU size for Omneon MediaGrid with jumbo frames enabled is 9000.
- CIFS\_CASE\_SENSITIVE determines if the CIFS (Samba) server running on the ContentBridge is case sensitive or not when looking at files and directories. Acceptable options are YES, NO and the default AUTO.

#### ContentServer 3000 Series Parameters:

The configuration file for the ContentServer 3000 series contains the following parameters:

- LOGHOST is the IP address of the log host
- REBOOT\_ON\_PANIC will set the ContentServers to reboot 60 seconds after a kernel panic. This should be set to YES.
- SLICE\_TIMEZONE determines the time zone for your location. Refer to [Step 5](#) for more information.
- ENABLE\_JUMBO\_SERVER=NO determines the MTU (maximum transmission unit) size used on the ContentServer. This option uses an MTU size of 1500. Set this field to YES to enable jumbo frames. The MTU size for Omneon MediaGrid with jumbo frames enabled is 9000.
- ENABLE\_JUMBO\_BRIDGE=NO determines the MTU size used on the ContentBridge. This option uses an MTU size of 1500. Set this field to YES to enable jumbo frames. The MTU size for Omneon MediaGrid with jumbo frames enabled is 9000.
- CIFS\_CASE\_SENSITIVE determines if the CIFS (Samba) server running on the ContentBridge is case sensitive or not when looking at files and directories. Acceptable options are YES, NO and the default AUTO.

5. Set the time zone specific to your location, for example:

SLICE\_TIMEZONE=Etc/GMT+8

Refer to [Table 18-1](#) for a specific time zone.

**Table 18-1: Time Zones**

Region	GMT Relative Time Zone	Region	GMT Relative Time Zone
Eniwetok	Etc/GMT+12	Rome	Etc/GMT-1
Samoa	Etc/GMT+11	Israel	Etc/GMT-2
Hawaii	Etc/GMT+10	Moscow	Etc/GMT-3
Alaska	Etc/GMT+9	Baghdad	Etc/GMT-4
Pacific	Etc/GMT+8	New Delhi	Etc/GMT-5

Region	GMT Relative Time Zone	Region	GMT Relative Time Zone
Mountain	Etc/GMT+7	Dhakar	Etc/GMT-6
Central	Etc/GMT+6	Bangkok	Etc/GMT-7
Eastern	Etc/GMT+5	Hong Kong	Etc/GMT-8
Atlantic	Etc/GMT+4	Tokyo	Etc/GMT-9
Brazilia	Etc/GMT+3	Sydney	Etc/GMT-10
Mid-Atlantic	Etc/GMT+2	Magadan	Etc/GMT-11
Azores	Etc/GMT+1	Wellington	Etc/GMT-12
Greenwich	Etc/GMT+0		

- When you are done editing the configuration file, click **Save File**.



**NOTE:** If one or more ContentDirectors go offline, the ContentServer configuration file is not automatically synchronized for you when the ContentDirectors comes back online. To manually synchronize the configuration file, go back to the **Edit ContentServer Config File** window and save the file again.

## Editing the ContentBridge Configuration File

The ContentBridge receives a configuration file from the primary ContentDirector. It may also receive the file from the secondary ContentDirector if this has been enabled in the DHCP service configuration. This file is required for ContentBridge operation and controls client access to the Omneon MediaGrid system. The ContentBridge configuration file must exist on both the Primary and Secondary ContentDirectors. Before editing this file you must know the following information:

- The name of the file system(s) on the Omneon MediaGrid.
- The user name and password of the account used to export the Omneon MediaGrid file system(s). Each file system may be exported with a different user name.

The configuration file is downloaded using the same name as its hostname. For example, ContentBridge CLB01200 attempts to download the file /ftpboot/config/gateway/CLB01200. The hostname of the ContentBridge is formed by appending its serial number to the letters CLB. Once present on the ContentBridge, the configuration file must be edited to support authentication and multiple-user access to the Omneon MediaGrid.

The ContentBridge configuration file can be edited to support authentication and multiple-user access to the Omneon MediaGrid, as well as various other settings, described below.

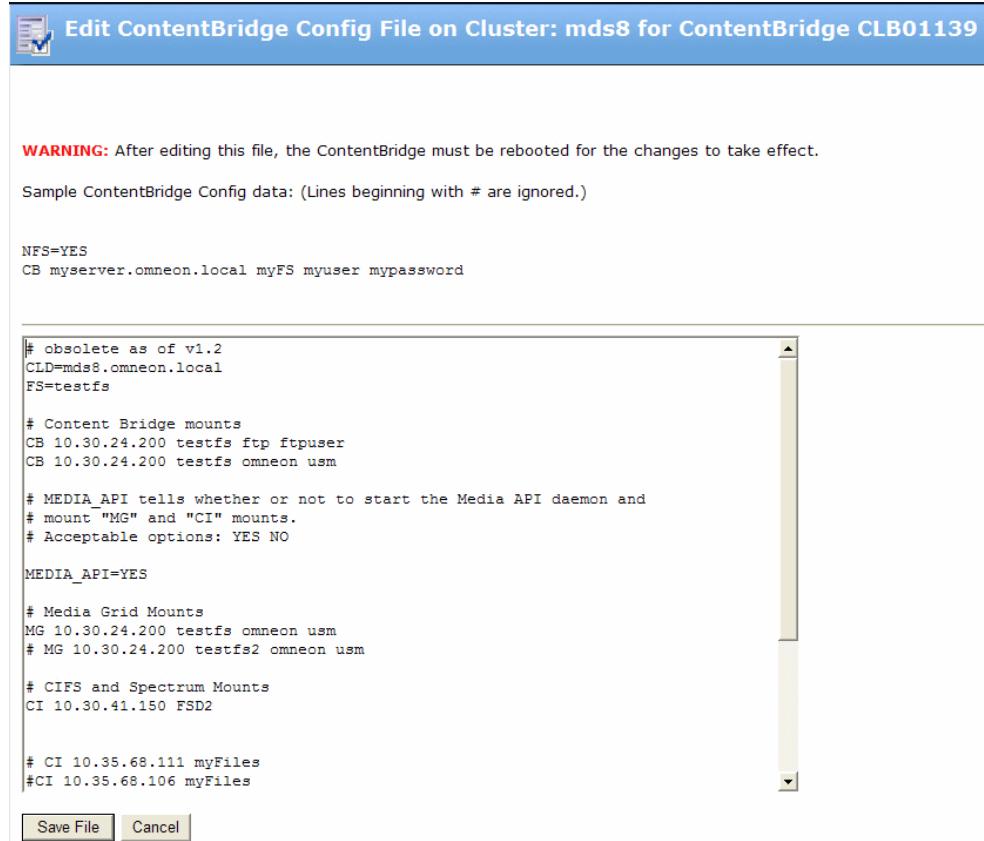


**IMPORTANT:** As the final step in replacing a ContentDirector, review this configuration file to ensure it contains the latest settings generated by the Configuration Assistant. Click **Save** to save the file on the new ContentDirector. Refer to the *Omneon MediaGrid Component Replacement Guide* and the product release notes for complete replacement instructions.

### To edit the ContentBridge configuration file:

- Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.

2. In the **Clusters** section, click the **Name** hyperlink for the required cluster to access the **Properties** page.
3. Click **View/Edit ContentBridge Config** to access the **Edit ContentBridge Config File** page. A sample is displayed in *Figure 18–3*.



**Figure 18–3: Edit ContentBridge Config File**

### Enabling User Access

Every user who wants access through the ContentBridge will need the following line in this configuration file. Set up a new line in this format for each Mount needed:

```
CB CLD FS_NAME USERNAME PASSWORD
```

Edit the file as follows:

- Replace CLD with the DNS name of the ContentDirector.
- Replace FS\_NAME with the name of the file system to mount.
- Replace USERNAME with the user name for that particular mount.
- Replace PASSWORD with the password associated with the USERNAME entry.



**NOTE:** When the ContentBridge is configured for ActiveDirectory, adding user access with the "CB lines, as described in this section, is not supported.

## Enabling CIFS Mounts

CIFS mounts are enabled using the MEDIA\_API option. Turning this option on provides the ability to transfer files using the CIFS protocol. Add the following line to the ContentBridge configuration file to enable this option:

```
MEDIA_API=YES
```

See the *Omneon MediaGrid Installation and Configuration Guide* for complete instructions on configuring the remote Media API to initiate transfers.

## Enabling/Disabling CIFS Optricks

Disabling CIFS oplocks improves data integrity for highly concurrent applications that use file locking. The setting is disabled by default. This option only affects the operation of CIFS on a ContentBridge.

Add the following line to the configuration file to disable CIFS oplocks:

```
CIFS_OPLOCKS=NO  
# Acceptable options are "YES" and "NO".
```

This parameter must be set in the configuration file on all ContentDirectors in a cluster in /tftpboot/config/config or in the /etc/gateway.conf file for a high bandwidth ContentBridge

## Enabling NFS Support

Enabling NFS support provides the ability to transfer files to using the NFSv3 protocol. Add the following line to the ContentBridge configuration file to enable this feature:

```
NFS=YES  
# Acceptable Options are "YES" and "NO". NO is the default
```

Adding the line above causes all user accessible file systems to be accessible via NFSv3.

## Enabling FS Permissions

Add the following line to the configuration file on all ContentDirectors in a cluster:

```
PERMISSIONS=YES  
# Acceptable Options are "YES" and "NO". NO is the default
```

## Adding Performance Tuning Settings

Add the following (optional) performance tuning settings. When missing, default values are used. The default values vary per operating system. Refer to **Memory Buffer Control** in the *Omneon MediaGrid Installation and Configuration Guide* for guidelines. Do not add these tuning parameters without first checking with your Harmonic representative.



**NOTE:** The following options apply for both "CB" and "MG" mounts.

Mount Specific Options (add on to specific mount lines):

```
CB CLD FS_NAME USERNAME PASSWORD OPTION=VALUE,OPTION=VALUE,...
```

# Valid OPTIONS:

- **filelimit:** controls the maximum number of simultaneously open files the Linux FSD supports. Replace VALUE with a number greater than 1.
- **readahead:** controls the amount of read-ahead memory used by each open/active file. Units are in slices. Replace VALUE with a number between 1 and 16, inclusive.

- **rdmsave:** controls the amount of random-save memory used by each open/active file. Units are in slices. Replace VALUE with a number between 0 and 6, inclusive
- **domain:** Replace VALUE with a character string that is the Windows Active Directory or Domain against which the ContentBridge is authenticated.
- **readpri:** Allows the Linux FSD to set the “read” priority for a ContentBridge. Replace VALUE with one of the following to set the priority:
  - bg = background
  - low = low
  - nr = normal
  - rt = real time
  - rt = system
- **writepri:** Allows the Linux FSD to set the “write” priority for a ContentBridge. Replace VALUE with one of the following to set the priority:
  - bg = background
  - low = low
  - nr = normal
  - rt = real time
  - rt = system

### Enabling Transfer of Growing Files (Tail-Mode FTP)

The tail-mode FTP feature provides the ability to transfer growing files to platforms other than Spectrum using the ContentBridge. Add the following line to the ContentBridge configuration file to enable this feature:

```
tailmode_enable=YES
```

Adding the line above enables tail-mode FTP with the default interval of 20 seconds. The interval—the time the ContentBridge waits to check for more data to send before completing a transfer—can be adjusted by adding the following optional line:

```
tailmode_interval=number of seconds
```

The *number of seconds* can be 0 to any number, however, updates to the file might be missed with anything less than 10 seconds and anything longer than 30 is probably unnecessary, unless long delays are expected.

### About the Media API Version

As of Omneon MediaGrid version 2.3, the only supported Media API version is 5.5. Regardless of the setting you enter for MEDIA\_API\_VERSION, it will default to 5.5.

### Enabling Jumbo Frames for an Individual ContentBridge

Jumbo frames can be enabled or disabled for individual ContentBridges by entering the ENABLE\_JUMBO\_BRIDGE parameter. Specify YES or NO to enable or disable jumbo frames for an individual ContentBridge. For example, ENABLE\_JUMBO\_BRIDGE=YES.

### Enabling SMB Signing

SMB signing is a feature that allows SMB communications to be digitally signed at the packet level, enabling the recipient to confirm the point of origination and the authenticity.



**NOTE:** CIFS performance is affected when SMB signing is enabled.

To configure SMB signing, add the SERVER\_SIGNING option followed by one of three values:

- auto: Samba sever offers SMB signing but does not enforce it for the clients.
- disabled: (Default setting) SMB signing on Samba server is disabled.
- mandatory: Samba server enforces SMB signing for the clients.

For example:

```
SERVER_SIGNING=auto
```

4. Click **Save File** when you are done editing the configuration file.
5. Reboot the ContentBridge after editing the configuration file for the changes to take effect.

**If the config file does not exist, do the following:**

1. Start an SSH session to the ContentDirector.
2. Create the directory and file on the ContentDirector by typing:  

```
sudo vi /tftpboot/config/gateway/<hostname>
```

The *hostname* is the five digit serial number of the ContentBridge prefixed with CLB. For example, ContentBridge 01001 is named CLB01001.



**IMPORTANT:** If one or more ContentDirectors go offline, the ContentBridge configuration file is not automatically synchronized for you when the ContentDirectors comes back online. To manually synchronize the configuration file, go back to the Edit ContentBridge Config File page and save the file again.

## Editing the High Bandwidth ContentBridge Configuration File

On a High Bandwidth ContentBridge, the configuration file is stored locally on the disk at /etc/gateway.conf. This file combines values from both the global configuration file for ContentServers and ContentBridges as well as values from the individual ContentBridge configuration file. For a description of the available parameters and options, refer to [Editing the ContentServer Configuration File](#) and [Editing the ContentBridge Configuration File](#).

**To edit the High Bandwidth ContentBridge configuration file:**

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. Scroll down to the **High Bandwidth ContentBridges** section as shown in [Figure 18-4](#).

High Bandwidth ContentBridges								
Name	IP Address	IP Address 2	Status	System Up Time	Config	System Management	Wink Status	Select
hbcb4	10.4.96.203		Connected	21 days, 23:11:13.38	<a href="#">Edit Config</a>	<a href="#">System Management</a>	Off	<input type="checkbox"/>
hbcb3	10.4.96.202		Connected	14 days, 15:37:23.59	<a href="#">Edit Config</a>	<a href="#">System Management</a>	Off	<input type="checkbox"/>
hbcb	10.4.96.200		Connected	14 days, 15:51:25.30	<a href="#">Edit Config</a>	<a href="#">System Management</a>	Off	<input type="checkbox"/>
hbcb2	10.4.96.201		Connected	14 days, 15:32:18.10	<a href="#">Edit Config</a>	<a href="#">System Management</a>	Off	<input type="checkbox"/>

[Wink On](#) [Wink Off](#) [Select all](#) [Clear](#)

**Figure 18-4: Opening the High Bandwidth ContentBridge Config File**

3. In the **Config** column, click the **Edit Config** link for the High Bandwidth ContentBridge you wish to configure. The **Edit Config File on High Bandwidth ContentBridge** page appears as shown in [Figure 18-3](#).

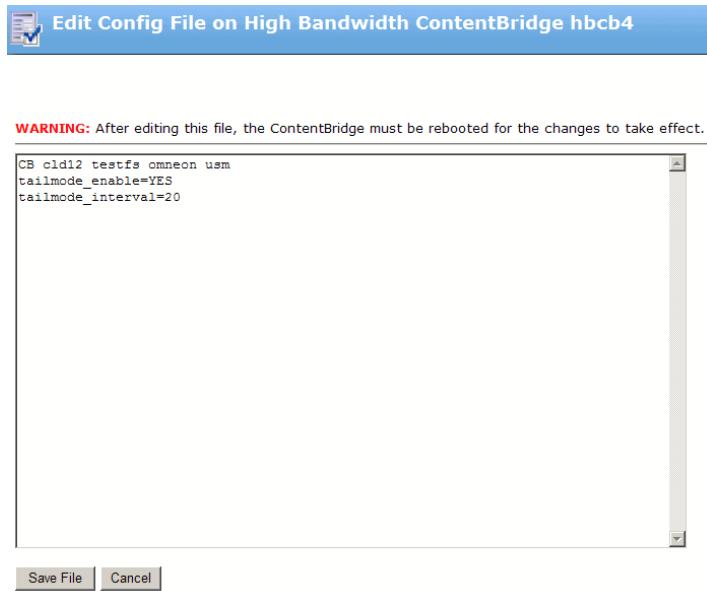


Figure 18-5: Edit ContentBridge Config File

4. Click **Save File** when you are done editing the configuration file.
5. Reboot the High Bandwidth ContentBridge after editing the configuration file for the changes to take effect.

## Enabling and Configuring Scheduled Balancing

The **Balancer** page in SystemManager allows you to initiate balancing or configure scheduled balancing to ensure that the disk space is balanced across all the ContentServers in a cluster.

### To enable and configure scheduled balancing:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Clusters** section, click the **Name** hyperlink for the required cluster to access the **Cluster Properties** page.
3. In the ContentServer Balancer Scheduling row, click **View/Edit Balancer Scheduling**. The **Balancer** page appears as shown in *Figure 18-6*.

The screenshot shows the 'Balancer' interface with the title 'Balancer Scheduling for Cluster: MGR-2'. The 'Balancing Status' section displays the following information:

Slices Balanced	0
Slices To Be Balanced	31687
Elapsed Time in Minutes	4
Host	No ContentDirector executing the balancer
Status	Not Running
Balancing Required?	Recommended

The 'On-demand Balancing' section contains three buttons: 'Start balancer(normal) now', 'Start balancer(high) now', and 'Stop balancer now'.

The 'Edit Schedule' section allows setting a weekly schedule for the balancer. It includes fields for 'Enable' (checkbox), 'Starttime' (Hour: 10 p.m., Min: 57), 'Duration' (1 hours), and 'Speed' (Normal). The schedule grid shows specific times for each day of the week.

At the bottom, there are buttons for 'Set Schedule', 'Disable All', and 'Done'.

Refresh Interval for this page is 1000 seconds.

**Figure 18–6: Scheduled balancing**

In the **Balancing Status** section, you can view the following for the selected cluster:

- **Slices Balanced:** Displays the slice count balanced since the balancing started.
- **Slices to be Balanced:** Displays the slice count yet to be balanced. This is an approximate number that is calculated at the beginning of the balancer run. This value is static and does not change while the balancer is running.
- **Elapsed Time in Minutes:** Displays the time in minutes since the last balancer started.
- **Host:** Displays the ContentDirector which is running the balancer.
- **Status:** Displays the current status of the balancer. This field will show either **Running**, **Not Running**, or **Suspended** if the balancer has been suspended during slice repair.
- **Balancing Required?:** Indicates whether or not balancing is recommended. This will show either **No**, **Recommended**, or **Highly Recommended**.



**NOTE:** If a ContentDirector failover occurs while the balancer is running, the new ContentDirector will recalculate the number of slices to be balanced without taking into account the balancing that already occurred with the failed ContentDirector. The values shown in the Balancing Status will change based on the recalculation by the new ContentDirector.

In the **On-demand Balancing** section, the following buttons are available:

- **Start balancer(normal) now:** Click to start the balancer in normal speed immediately regardless of any other selected settings.

- **Start balancer(high) now:** Click to start the balancer in high speed immediately regardless of any other selected settings.
  - **Stop balancer now:** Click to stop the balancer immediately regardless of any other selected settings.
4. In the **Scheduled Balancing** section, you can configure the schedule and other parameters for rebalancing. To enable and configure the schedule, click the **Edit Schedule** checkbox. This enables the parameters as shown in *Figure 18-7*.

<input checked="" type="checkbox"/> Edit Schedule							
Scheduled Balancing							
Day	Sun	Mon	Tue	Wed	Thur	Fri	Sat
<b>Enable</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Starttime</b>	Hour 10 p.m. Min 57	Hour Noon Min 30	Hour Noon Min 30	Hour 1 a.m. Min 0	Hour 7 p.m. Min 23	Hour 10 p.m. Min 8	Hour 10 a.m. Min 56
<b>Duration</b>	1 hours	1 hours	1 hours	1 hours	23 hours	5 hours	18 hours
<b>Speed</b>	Normal	High	High	High	Normal	Normal	Normal

Set Schedule      Disable All      Done

Refresh disabled.

**Figure 18-7: Edit Schedule**



**NOTE:** The Balancer uses the system time of the SystemManager server. If the system time for the client you are using to access SystemManager is different than the system time for the SystemManager server, this may create confusion.

- **Enable:** Click to enable balancing for the selected day.
- **Starttime:** Click the drop-down menus to select the hour and minute that balancing will start on the selected day.
- **Duration:** Click the drop-down menu to choose the duration of the scheduled balancing for the selected day.
- **Speed:** Click the drop-down menu to select between **Normal** and **High** speed balancing. Harmonic recommends that you run High speed only at times when there are no clients accessing the cluster (for example, this may be late at night). If clients are connected to the cluster, Normal speed should be used.



**NOTE:** High speed balancing is equivalent to multiple clients accessing the cluster and will reduce the bandwidth of the cluster.

- **Set Schedule (button):** Click to save any changes made in the **Scheduled Balancing** section of the Balancer page.
  - **Disable All (button):** Click to disable balancing for all days.
5. Click **Done** to return to the **Cluster Properties** page.

## Enabling and Configuring Log Forwarding

Log Forwarding allows you to configure your ContentDirector to send log files to a desired e-mail address.



**IMPORTANT:** Before configuring Log Forwarding, make sure that you have followed the procedures described in "Adding the Omneon MediaGrid Devices to the Local DNS" and "Setting Up Reverse DNS Lookups" in the *Omneon MediaGrid Installation and Configuration Guide*.

### To configure Log Forwarding:

1. Make sure you are logged into the Omneon MediaGrid system. Refer to the instructions in *Gaining Secure Access to an Omneon MediaGrid*.
2. From the **Configuration** tab in SystemManager, click the **Servers and Switches** icon under the MediaGrid heading in the left-hand column.
3. From the **Servers and Switches** page, click the link for the cluster that contains the ContentDirector for which you want to configure log forwarding. The **Cluster Properties** page for that cluster appears.
4. From the **Cluster Properties** page, click the button titled **View/Edit Log Forwarding Options**. See *Figure 18-8*.

ContentBridge Configuration	ContentBridge	DNS Name	IP Address1
	CLB01349	CLB01349	10.4.107.197
<b>Sending E-mail of Log Files Configuration</b>			
<b>View/Edit Log Forwarding Options</b>			
<b>Shutdown cluster</b>			
Shutdown all ContentDirectors in cluster			
Shutdown all ContentServers in cluster			

Figure 18-8: Log Forwarding button

The **Edit "Log Forwarding Configuration" File...** page appears. See *Figure 18-9*.

Edit "Log Forwarding Configuration" File on Cluster: cld10

```

# Customer
CUSTOMER=Omneon, Inc.

# This is the username/password & hostname (or IP address) for the SMTP server
SMTP_USER=username
SMTP_PASS=password
SMTP_SERVER=localhost

# When using this feature, you are literally sending/receiving mail via SMTP
# Because of this we need to have a sender and a recipient email address defined
SMTP_TO=MGSsupportLogs@omneon.com
SMTP_FROM=root@localhost

# These next two are optional, but allow for better understanding on the receiving end
# ** There will ALWAYS be some kind of a message, but you can append your own stuff
# here to help on the receiving end to identify company/system/etc
SMTP SUBJECT=Your MediaGrid Log
SMTP_MESSAGE=This is a default message, but other file/date info will automatically get
 appended to whatever you write here.

Save File Cancel

```

Figure 18-9: Edit "Log Forwarding Configuration" File page

5. Read the descriptions of the values in the configuration file and then modify the values as needed.

The configuration file includes the following configurable values:

- **CUSTOMER:** (Optional) The name of the customer to be included in the log file.
- **SMTP\_SERVER:** (Required) IP address or hostname of the SMTP server.
- **SMTP\_USER:** (Required) The user name required for connecting to the SMTP server. If the sever does not require authentication, then leave this value blank.
- **SMTP\_PASS:** (Required) The password required for connecting to the SMTP server. If the sever does not require authentication, then leave this value blank.
- **SMTP\_TO:** (Required) This is the destination e-mail address to which log e-mails will be sent. To send Omneon MediaGrid log files to Technical Support, enter [MGSupportLogs@omneon.com](mailto:MGSupportLogs@omneon.com) for this value.
- **SMTP\_FROM:** (Required) A valid e-mail address, which will be used for replies to the log e-mail. Any reply to the log e-mail will go to this "from" address.
- **SMTP SUBJECT:** (Optional) If specified, this value will be used as the subject in the e-mail messages sent out.
- **SMTP\_MESSAGE:** (Optional) Any message you wish to include in the log e-mail, which may include information regarding the company, system, and so on.
- **ATTACHMENT\_SIZE:** (Optional) The specified size of each log, indicated in bytes (b), kilobytes (k), or megabytes (m). When this size is reached, the log is split into separate e-mails.



**NOTE:** Make sure the ATTACHMENT\_SIZE value is smaller than the maximum e-mail attachment size allowed by your e-mail server.

- **SLEEP\_TIME:** (Optional) When multiple e-mails are being sent, this value specifies the amount of time, in seconds, that SystemManager will wait before sending each e-mail.
  - **SEND\_ENABLED:** (Required) When set to TRUE, this value enables Log Forwarding, and, when set to FALSE, disables it.
6. Once you have modified the values, click **Save File**. A message appears indicating whether the file was successfully saved.

If a problem occurs with log forwarding once it has been configured (for example, due to an invalid entry in the configuration file), SystemManager will generate an alarm describing the problem. For information on alarms, refer to [Viewing and Clearing Alarms and Events for Omneon MediaGrid Components](#).

*Figure 18–10* shows an example of the e-mail sent by log forwarding once it has been configured.

```
ORIGINAL FILE: Omneon__Inc_.Unknown-Cluster-ID.usm-
dev2.vDEBUG.20080526105034.mdscore.1.gz
TIMESTAMP: May 26 10:50:41
THIS IS CHUNK 1 OF 1

This is a default message, but other file/date info will automatically
get appended to whatever you write here.
```

**Figure 18–10: Example e-mail produced by Log Forwarding**

Note that the e-mail contains the following elements:

- Original File name, which includes:
  - Customer Name (underscores replace any unacceptable characters)

- Cluster ID
- Hostname
- Omneon MediaGrid software version
- Time and Date stamp
- Original uncompressed file name
- Timestamp of e-mail
- Identification of which file this is among the total number of files
- A user-definable message

These elements, and the content of the e-mail, will vary depending on your modifications to the Log Forwarding configuration file.

## Balancing the ContentServer 3000 Controllers

Any time one controller on a ContentServer goes down, which may be during an upgrade or replacement, the active Slice Server processes on that controller, which manage ContentServers and ContentStores, fail over to the remaining controller. Once both controllers are up and running, Harmonic recommends that you balance the Slice Server processes across controllers to improve performance. This is done by using the Fallback button on the ContentServer or ContentStore Properties page.

Harmonic recommends that you balance your ContentServer 3000 at these times:

- Following a ContentServer upgrade.
- Following a controller replacement.
- Following a controller failover.
- If the **Managed ContentStores and ContentServers** field on the ContentServer Properties page shows all, or a large majority, of ContentStores and ContentServers being managed by one controller (for example, five out of six).

If you fail to balance your ContentServer in the situations listed above, it may affect the performance of the ContentServer.



**NOTE:** Harmonic recommends that you schedule balancing during times when the system is not loaded. For example, this may be late at night. System performance may be affected while balancing is occurring.

### To balance the ContentServer 3000:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentServers/ContentStores** section, click the **Name** hyperlink for the required ContentServer to access the **Properties** page.
3. Click the **Fallback** button.



**NOTE:** You may also use the Fallback button on any ContentStore being managed by the ContentServer you wish to balance.

4. Verify that all ContentStores and ContentServers appear in the **Managed ContentStores and ContentServers** field on the ContentServer Properties page. If they are not all listed, contact Technical Support for assistance.

After clicking Fallback, you may observe on the ContentServer Properties page that some ContentStores or ContentServers in the **Managed ContentStores and ContentServers** field for one controller now appear under a different controller, in which case, balancing was successful.

## Upgrading Omneon MediaGrid Firmware

To upgrade the Omneon MediaGrid firmware, first upgrade the ContentDirectors, then the ContentServers, and then the ContentBridges. To avoid loss of service, upgrade the ContentDirectors one at a time, as described in the steps that follow. After all the ContentDirectors have been upgraded, you can then upgrade the ContentServers and ContentBridges.

**To select a new Omneon MediaGrid firmware version and install it on a ContentDirector:**

1. Click the **Home** tab to display the **Options** page.
2. From the left-hand column, click the **Firmware Selection** icon to display the **Firmware Version Selection** page as displayed in *Figure 18-11*.

MediaDeck/Spectrum	ProXchange	ProBrowse	Omneon MediaGrid
omneon.nightly	<input type="radio"/> proxchange.release-1.4 <input type="radio"/> 2009.03.24.22.00 <input type="radio"/> 2009.03.05.22.00	<input type="radio"/> proxchange.release-1.3 <input type="radio"/> 2008.10.21.15.04 <input type="radio"/> 2008.10.20.10.03 <input type="radio"/> 2008.10.17.11.34 <input type="radio"/> 2008.10.16 <input type="radio"/> 2008.10.13 <input type="radio"/> 2008.10.10 <input type="radio"/> 2008.10.08.11.00 <input type="radio"/> 2008.10.06.11.02 <input checked="" type="radio"/> 2008.10.01.17.33 ✓	<input type="radio"/> mediagrid.release-3.0 <input checked="" type="radio"/> 2011.04.12 ✓ <input type="radio"/> 2011.04.11 <input type="radio"/> 2011.04.08 <input type="radio"/> 2011.04.05 <input type="radio"/> 2011.04.01 <input type="radio"/> 2011.03.31 <input type="radio"/> 2011.03.30 <input type="radio"/> 2011.03.29 <input type="radio"/> 2011.03.25 <input type="radio"/> 2011.03.23 <input type="radio"/> 2011.03.22.16.14 <input type="radio"/> 2011.03.21.11.34
2011.01.24			
2011.01.18			
2010.12.07 ✓			

**Figure 18-11: Firmware Version Selection**

3. In the **Omneon MediaGrid** column, click the radio button for the desired firmware version. The red check mark indicates the selected version.
4. When the confirmation dialog appears, click **OK** to accept.
5. Click the **Upgrade Firmware** icon in the left-hand column to display the **Upgrade Firmware** page.
6. In the **ContentDirectors** section, click in the **Select** column to specify the ContentDirector you want to upgrade. *Figure 18-12* shows a partial view of the **Upgrade Firmware** page.



**NOTE:** To avoid loss of service, upgrade the ContentDirectors one at a time.

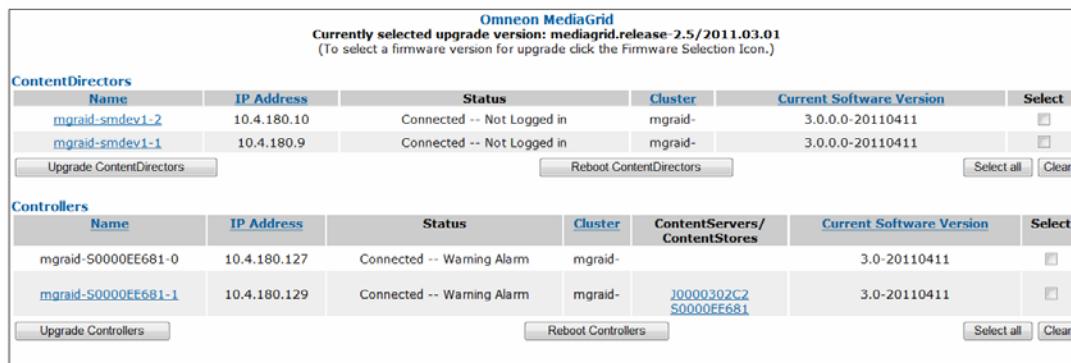


Figure 18–12: Upgrade Firmware

- Click **Upgrade ContentDirectors** to start upgrading the firmware of the selected **ContentDirector**.



**IMPORTANT:** When upgrading and/or rebooting Omneon MediaGrid units, do not upgrade or reboot two different unit types at the same time. Consult with your Harmonic Representative(s) if you need assistance.

- Wait for the Status column to show “Connected.”
- Repeat steps 6 and 7 to upgrade another ContentDirector.
- Once the firmware has been downloaded to the **ContentDirector(s)**, return to the **ContentDirector** section of the **Upgrade Firmware** page to verify the version number for each unit that was upgraded.



**NOTE:** For this release, you do not need to click Reboot ContentDirectors to activate the new firmware on the ContentDirectors.

- Upgrade the firmware for the ContentServers in your system.
  - If your system includes ContentServer 1000 and 2000 series, then continue to [Upgrading ContentServer 1000 Series and ContentServer 2000 Series](#).
  - If your system includes ContentServer 3000 series and ContentStores, continue to [Upgrading ContentServer 3000 Series](#).

### Upgrading ContentServer 1000 Series and ContentServer 2000 Series

- Upgrade the **ContentServers** by clicking in the **Select** column in the ContentServers section of the page to specify one or more unit(s) for upgrade. Note that you can also click **Select all...** to select and upgrade all ContentServers.
- Click **Upgrade ContentServers** to start upgrading the firmware of the selected ContentServer(s).
- Once the firmware has been downloaded to the **ContentServer(s)**, return to the **ContentServer** section of the **Upgrade Firmware** page and click **Reboot ContentServers**. The updated firmware version displays when the reboot is complete.

### Upgrading ContentServer 3000 Series

- In the **Controllers** section of the page, select one controller per ContentServer 3000 to upgrade by clicking in the **Select** column for the corresponding controller and then clicking **Upgrade Controllers**.



**IMPORTANT:** Upgrading both controllers on a ContentServer 3000 at the same time will cause the system to be unavailable during reboot and is not recommended.

- You can upgrade multiple controllers from different ContentServers in parallel by selecting one controller from each of the ContentServers you wish to upgrade.
- b. Once the firmware has been downloaded to the controller(s), return to the **Controllers** section of the **Upgrade Firmware** page. Select each of the controllers that were upgraded and click **Reboot Controllers**. The updated firmware version displays when the reboot is complete.
  - c. Select the second controller for each of the ContentServers you are upgrading by clicking in the **Select** column for the corresponding controller and then clicking **Upgrade Controllers**.
  - d. Select each of the controllers that were upgraded and click **Reboot Controllers**. The updated firmware version displays when the reboot is complete.
  - e. Once you have upgraded both controllers on a ContentServer, Harmonic recommends that you balance the ContentServer. For details, refer to [Balancing the ContentServer 3000 Controllers](#).
12. Upgrade the firmware for the ContentBridge or High Bandwidth ContentBridge (ContentBridge 2010B/2010C) in your system:
- For ContentBridges: in the **ContentBridges** section, click in the **Select** column to specify one or more unit(s) for upgrade, and then click **Reboot ContentBridges** to load the latest version of the firmware on each **ContentBridge**.
  - For High Bandwidth ContentBridges: in the **High Bandwidth ContentBridges** section, select one or more unit(s) for upgrade, and then click **Upgrade High Bandwidth ContentBridges**.



**NOTE:** If you are upgrading from MediaGrid version 3.1 or higher, the High Bandwidth ContentBridge will restart automatically once the upgrade is complete. If you are upgrading from a version prior to 3.1, you must manually restart the High Bandwidth ContentBridge. Make sure to wait at least 15 minutes after upgrading before you restart. To restart, click the link in the **Name** column to navigate to the **Properties** page, and then click **Reboot**.

This completes the firmware upgrade process for a Omneon MediaGrid.

## Upgrading ContentServers While Running ProXchange (for ContentServers 1000/2000 Series Only)

When running ProXchange, it is required that you stop ProXchange services prior to upgrading ContentServers. To do this follow these instructions:

1. From the **ProXchange** page in SystemManager, in the **JobScalers** section, under the **Services** field click **Stop**.
2. In the **JobDirectors** section, under the **Services** field click **Stop**.
3. Upgrade the ContentServers and reboot them according to the instructions provided in the *Omneon MediaGrid Installation and Configuration Guide*
4. When the upgrade process is complete, start services for ProXchange JobDirectors, by clicking the **Start** button in the **Services** field on the ProXchange page
5. Start services for ProXchange JobScalers, by clicking the **Start** button in the **Services** field on the ProXchange page



**NOTE:** If this procedure is not followed, ContentServer upgrades may fail without an indication from SystemManager.

---

## Changing the Wink State on Omneon MediaGrid Components, Clusters, Volumes, and Groups

### To change the wink state:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **Cluster**, **ContentServers**, **ContentDirectors**, **ContentBridge** sections, select the cluster or component to wink and click the **Wink** button.
  - If On, click **Wink Off** to stop winking the cluster or unit's blue light bar(s), located on the front of the units.
  - If Off, click **Wink On** to start winking the unit's blue light bar(s), located on the front of the units
3. To wink a volume or group, select the appropriate cluster and then select which volume(s) or group(s) to wink.



**NOTE:** If one of the units of a unit is not winking, the top level wink status for that unit is reported as "Mixed". For instance, a volume and its associated cluster will report "mixed" if some group(s) within the volume are winking (On) and some are not (Off). Thus, the only time the wink status of a cluster is On is when all units within the cluster (volumes, groups, ContentServers, ContentDirectors, and ContentBridges) are set to On.

---

## Enabling and Configuring Checkpoint Schedules

Harmonic strongly recommends that you schedule Checkpoints for your Omneon MediaGrid system. Refer to [About Checkpoints and Scheduling Checkpoints](#) for a description of Checkpoints and recommendations about Checkpoint intervals.

Note the following important points:

- You must have Administrator privileges to perform these functions.
- Before configuring checkpoints, Harmonic recommends that you set the timezone on each ContentDirector. Refer to "Setting ContentDirector Timezones" in the *Omneon MediaGrid Installation and Configuration Guide* for step by step instructions.

### To enable and configure Checkpoint operations:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentDirectors** section, click the **Name** hyperlink to access the **Properties** page for the required ContentDirector.

In the **Current Checkpoint Schedule** section, click **Change Checkpoint Schedule** to access the **Checkpoint Configuration** page in [Figure 18-13](#):

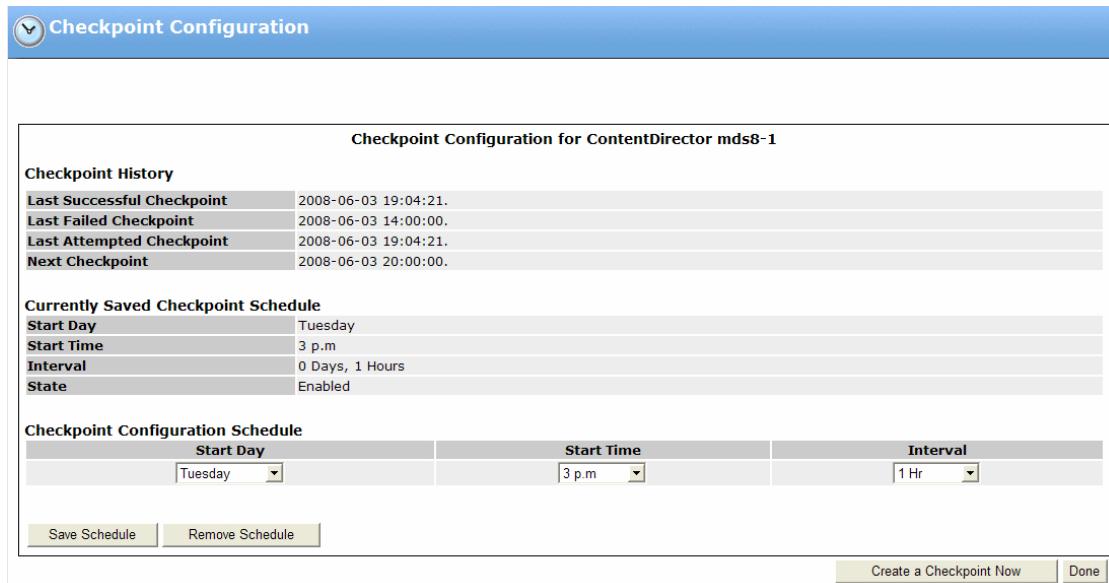


Figure 18–13: Checkpoint Configuration

3. In the **Checkpoint Configuration Schedule** section, configure as follows:
  - **Start Day:** Select the day when the next Checkpoint should occur.
  - **Start Time:** Select the hour of the day when the next Checkpoint should start.
  - **Interval:** Select the interval between Checkpoints; from 1 to 12 hours, 16 or 20 hours, or from 1 - 15 days.Refer to [About Checkpoints and Scheduling Checkpoints](#) for notes and recommendations about Checkpoints and Checkpoint intervals.
4. Click **Create a Checkpoint Now** to perform an immediate Checkpoint or click **Save Schedule** to save the schedule information and perform the Checkpoint at the specified time.  
Refer to [About Checkpoints and Scheduling Checkpoints](#) for information regarding the storage and viewing of checkpoints.

## Changing the Descriptions for Omneon MediaGrid Components

### To change the descriptions:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentDirectors**, **ContentServers**, and/or **ContentBridges** section(s), click the **Name** hyperlink to access the unit's **Properties** page.
3. Click **Change Desc** to display the **Change .... Description** page.
4. Type the new description in the text box.
5. Click **Save** to save the description and return to the **Properties** page.

The new description appears in the unit's **Description** field.

## Viewing and Clearing Alarms and Events for Omneon MediaGrid Components

To view and/or clean alarms:

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
2. In the **ContentDirectors**, **ContentServers**, and/or **ContentBridge** section(s), click the **Name** hyperlink to access the unit's **Properties** page.
3. Scroll to the bottom of the page to view any alarms or events associated with the selected unit as shown in *Figure 18–14*.

Events					
You may clear the listed alarms by clicking this button: <input type="button" value="Clear All"/> You may delete the listed alarms by clicking this button: <input type="button" value="Delete All"/>					
Level	Time	Event	Info	Clear?	Delete
INFO	Tue Jun 3 09:29:13 2008	Found network connection to device.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Tue Jun 3 09:28:46 2008	Device reboot	SNMP agent rebooted	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Tue Jun 3 09:27:02 2008	Device reboot	Device rebooted	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
CRIT	Tue Jun 3 09:13:41 2008	Lost network connection to device.	Lost SS connection to device CSS01954(10.30.24.189). Device: UP, USM: DOWN, SNMP: UP	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
INFO	Tue Jun 3 06:12:23 2008	Found network connection to device.		<input type="button" value="Clear"/>	<input type="button" value="Delete"/>

**Figure 18–14: Alarm or Event Properties**

4. If desired, perform the following actions:
  - Click **Clear All** to clear all alarms in the list, but retain the individual events. This action also clears the Alarm icon from the upper right corner of the user interface.
  - Click **Delete All** to remove all alarms from the list and clear the Alarm icon.
  - Click **Clear** to clear an individual event's alarm and retain the event in the list. This action clears the Alarm icon for that event, but the icon may continue to blink if other alarms are active.
  - Click **Delete** to delete the event from the list and clear that event's Alarm icon. The icon may continue to blink if other alarms are active.

To receive e-mailed logs displaying the status of a selected ContentDirector, refer to [Enabling and Configuring Log Forwarding](#).

## Performing Management and Troubleshooting on an Omneon MediaGrid

With this release of the SystemManager application, you can perform system management, troubleshooting, and monitoring tasks on an Omneon MediaGrid as follows:

- Use the Dell™ OpenManage™ utility (installed with SystemManager Release 5.1 and later) to perform RAID and Disk maintenance. Refer to [Accessing the Dell OpenManage Utility](#) for additional information.
- Use the SystemManager to discover Omneon MediaGrid units and to send alarms if communication is lost between the units. Refer to [Filtering Alarms](#) and [Viewing and/or Clearing Alarms](#) for additional information.

- Use the HP ProCurve Switch utility (installed with SystemManager Release 5.1 and later) for switch management. Refer to [Accessing the HP ProCurve Switch Utility](#) for additional information.

## Accessing the Dell OpenManage Utility

**To access Dell OpenManage for Omneon MediaGrid:**

1. Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page (*Figure 18-15*).
2. In the **ContentDirector** section, click the **System Management** hyperlink.

Omneon MediaGrid									
Clusters		#Volumes	#Groups	#Filesystems	Total Disk Space	Free Space(%)	Wink Status	Select	
MGR-1	1	2	1		7.59 TB	99.88	Off	<input type="checkbox"/>	
mds8	1	1	1		11.92 TB	42.05	Off	<input type="checkbox"/>	

ContentDirectors											
Name	IP Address	IP Address 2	Network Status	System Up Time	Total Disk Space	Free Space (%)	Cluster	System Management	Wink Status	Select	
MGR-1_1	10.4.166.200	10.4.166.201	Connected -- Logged in as Administrator -- Error Alarm	3 days, 21:12:40.93	7.59 TB	99.88	MGR-1	<a href="#">System Management</a>	Off	<input type="checkbox"/>	
mds8-2	10.4.112.201	10.4.113.201	Connected -- Logged in as Administrator	96 days, 17:40:45.19	11.92 TB	42.05	mds8	<a href="#">System Management</a>	Off	<input type="checkbox"/>	
mds8-1	10.4.112.200	10.4.113.200	Connected -- Logged in as Administrator	5 days, 18:29:11.88	11.92 TB	42.05	mds8	<a href="#">System Management</a>	Off	<input type="checkbox"/>	

**Figure 18-15: Omneon Servers & Switches**



**NOTE:** On the NSM-2007/K SystemManager Platform, a warning dialog appears when attempting to access the Dell™ OpenManage™ interface for Omneon MediaGrid via the System Management links. Ignore the warning and proceed to the OpenManage GUI by clicking Continue.

The Dell OpenManage Log in page opens (*Figure 18-16*).

Dell OpenManage

DELL

mds5-2.omneon.local

**Log in**

Type your username and password, then click OK.

Username:	<input type="text" value="root"/>
Password:	<input type="password" value="*****"/>
Application:	Server Administrator

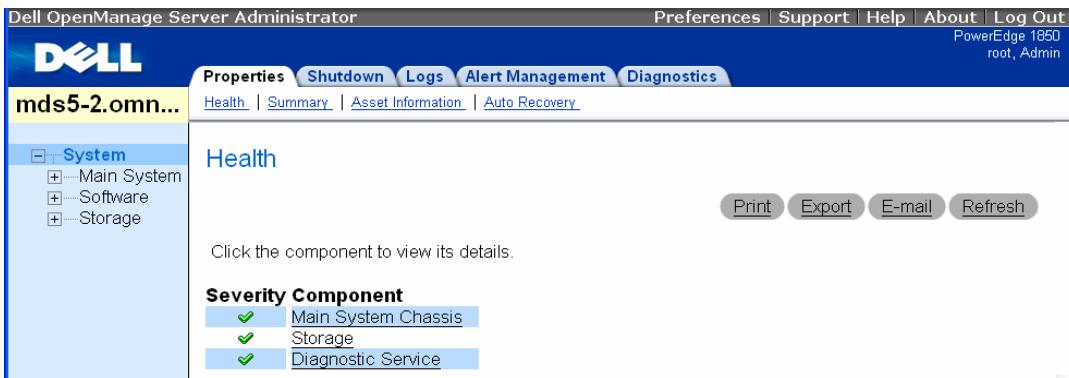
**Figure 18-16: OpenManage Login**

3. Log in with the following user name and password:

User name: ovnuser

Password: OVN@SvCaUsa

The Dell OpenManage window (*Figure 18-17*) is displayed.



**Figure 18-17: Open Manage Health Window**

- On the left hand navigation column, navigate to the RAID Controller at:

System > Storage > PERC 4e/Di (Embedded) > Channel 0 (RAID) > Backplane > Array Disks

and/or:

System > Storage > PERC 4e/Di (Embedded) > Channel 0 (RAID) > Virtual Disks

Click the **Help** tab at the top of each page to view information about the page and execute disk related tasks.

## Accessing the HP ProCurve Switch Utility

To access the HP ProCurve utility for Omneon MediaGrid:

- Click the **Servers & Switches** icon on the **Configuration** tab to access the **Servers & Switches** page.
- In the **Network Switches** section (*Figure 18-18*), click the **Switch Management** hyperlink.

Network Switches				
IP Address	Network Status	System Up Time	Model	Switch Management
10.30.24.1	Connected	183 days, 1:55:50.79	CNS-5412	<a href="#">Switch Management</a>
10.30.25.1	Connected	183 days, 1:56:05.02	CNS-5412	<a href="#">Switch Management</a>
10.30.24.6	Connected	106 days, 13:33:27.65	CNS-1001-CXF	<a href="#">Switch Management</a>
10.30.24.7	Connected	45 days, 20:54:57.52	CNS-1001-CXF	<a href="#">Switch Management</a>
10.30.25.6	Connected	106 days, 13:26:55.71	CNS-1001-CXF	<a href="#">Switch Management</a>
10.30.25.7	Connected	48 days, 20:30:43.40	CNS-1001-CXF	<a href="#">Switch Management</a>

Refresh Interval for this page is 30 seconds.

**Figure 18-18: Network Switches Section**

The HP ProCurve Switch **Log in** page opens.

- Enter the following information in the **Log in** fields:

User name: ovnuser

Password: OVN@SvCaUsa

The HP ProCurve Switch window (*Figure 18-19*) is displayed.

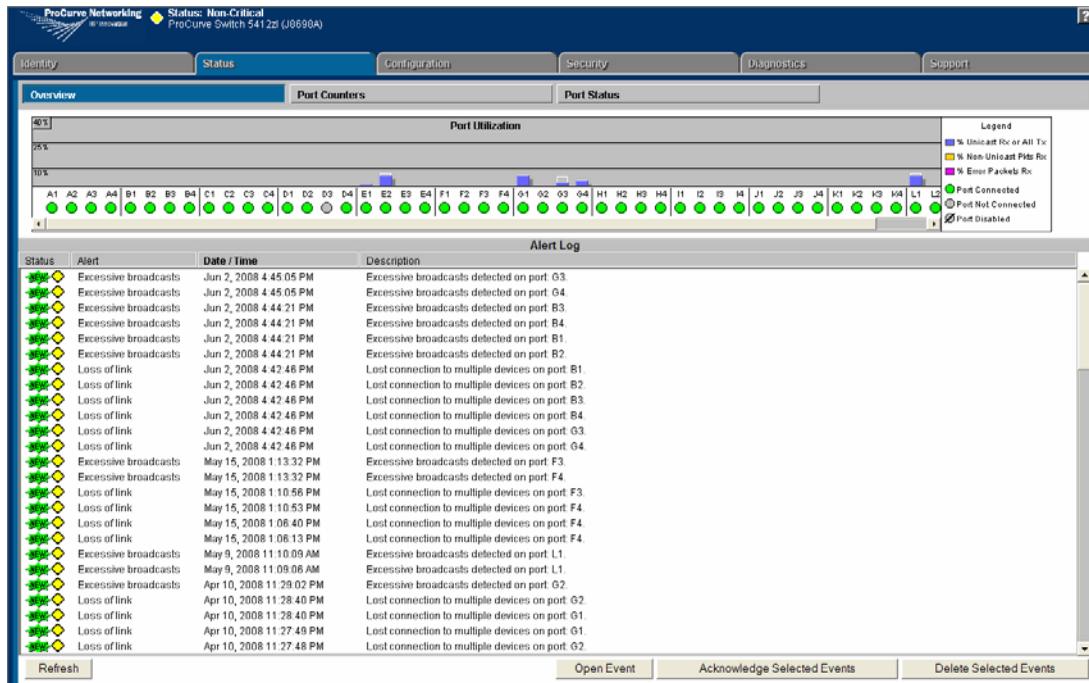


Figure 18–19: HP ProCurve Switch Window

As a start, navigate to the following locations:

- **Status tab > Overview** for port utilization details and log messages for network switches.



**NOTE:** The names and descriptions of alerts in the **Alert Log** section of the **Status** tab may differ from the same alarms listed by SystemManager. To identify alerts that may correspond to network switch alarms reported by SystemManager, search the Alert Log for events occurring in the same time frame as the SystemManager alarms.

- **Configuration tab > Device View** to gain Telnet access for advanced configuration and view port LEDs.
- **Diagnostics tab > Configuration Report** to view the switch config report.

Refer to the HP documentation which ships with the Network Switch(es) for additional information on the functionality of this utility.

# Chapter 19

## Omneon MediaGrid Performance Monitoring

This chapter provides procedures for monitoring performance of your Omneon MediaGrid system. Choose from the following topics:

- [Viewing and Navigating Omneon MediaGrid Performance Statistics](#)
- [Viewing Performance Statistics for Clusters](#)
- [Viewing Performance Statistics for ContentDirectors](#)
- [Viewing Performance Statistics for ContentServers](#)
- [Viewing Performance Statistics for ContentBridges](#)
- [Viewing Performance Statistics for Disk Drives](#)

Refer to the *Omneon MediaGrid Installation and Configuration Guide* for detailed instructions on installing an Omneon MediaGrid system.

### Viewing and Navigating Omneon MediaGrid Performance Statistics

To view performance statistics for your Omneon MediaGrid system, from the **Configuration** tab in SystemManager, click the **Performance** icon under the **Omneon MediaGrid** heading in the left-hand column (see *Figure 19–1*).



**NOTE:** In order to view the Performance Monitoring feature of SystemManager from a client PC, you must have Adobe Flash Player\* installed.

The screenshot shows the SystemManager interface with the 'Configuration' tab selected. On the left, there's a sidebar with several categories: Spectrum, SystemDiagram, Player Configuration, Disk Utilities, Access Control, Omneon MediaGrid (which includes Servers & Switches, Install License, and Performance), and another Access Control section. The 'Performance' icon under Omneon MediaGrid is highlighted with a red circle. To the right, a large window titled 'Servers & Switches' displays performance statistics for clusters, content directors, and content servers. The 'Clusters' section shows one cluster named 'oratt' with 1 volume, 1 group, 1 filesystem, and 23.33 TB total disk space. The 'ContentDirectors' section lists two entries: 'oratt' at 10.10.136.201 and 'oratt1' at 10.10.137.200, both connected and not logged in, with 53 days up time and 23.33 TB disk space. The 'ContentServers' section lists three entries: 'CSS02881' at 10.10.137.137, 'CSS02467' at 10.10.137.143, and 'CSS02863' at 10.10.137.146, all connected and showing various performance metrics like free space and read rates.

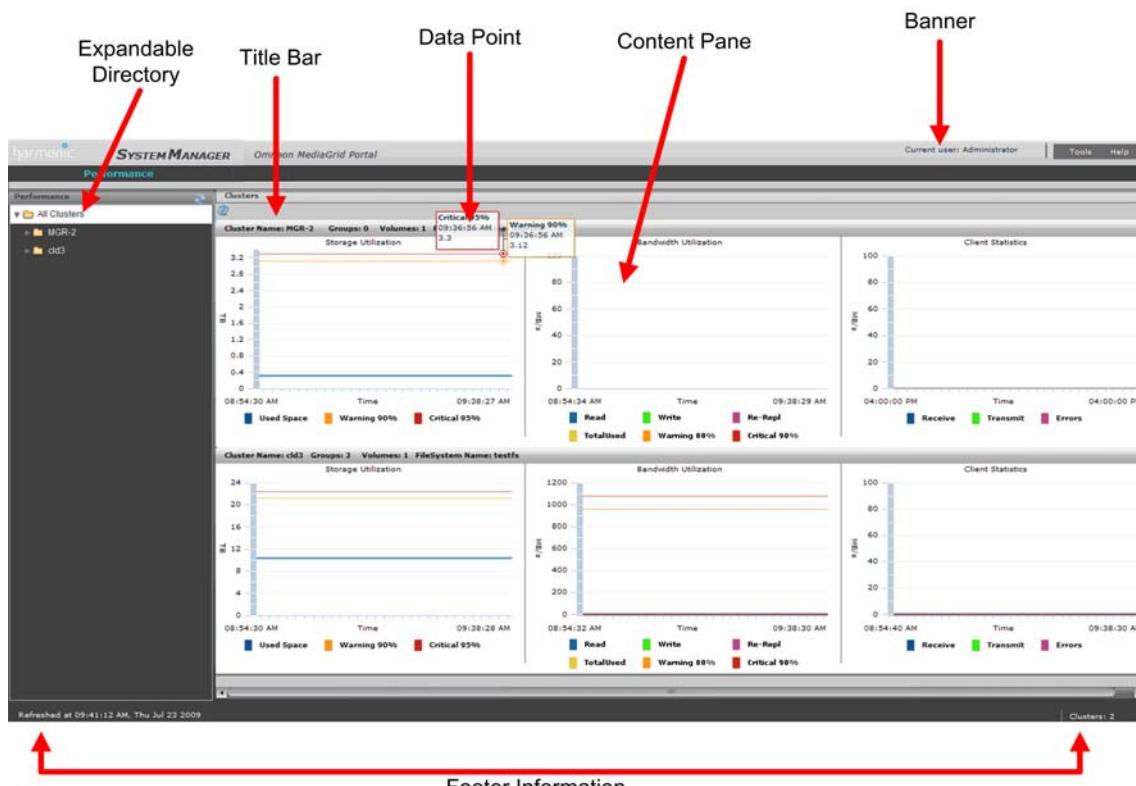
Name	#Volumes	#Groups	#Filesystems	Total Disk Space
oratt	1	1	1	23.33 TB

Name	IP Address	IP Address 2	Network Status	System Up Time	Total Disk Space
oratt	10.10.136.201	10.10.137.201	Connected -- Not Logged in	53 days, 23:22:33.00	23.33 TB
oratt1	10.10.137.200	10.10.136.200	Connected -- Not Logged in	53 days, 23:21:29.55	23.33 TB

Name	IP Address	IP Address 2	Network Status	System Up Time	Total Disk Space	Free Space (%)	Reads (MB/s)
CSS02881	10.10.137.137	10.10.136.149	Connected	19 days, 23:54:03.97	1.49 TB	36.70	0
CSS02467	10.10.137.143	10.10.136.142	Connected -- Error Alarm	19:23:54:13.58	1.99 TB	57.53	0
CSS02863	10.10.137.146	10.10.136.143	Connected	19 days, 23:54:07.46	1.99 TB	31.77	0

Figure 19–1: Omneon MediaGrid Performance Icon

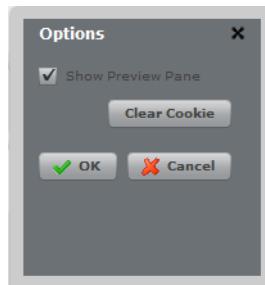
Omneon MediaGrid Performance statistics appear in a separate browser window, as shown in *Figure 19–2*.



**Figure 19–2: Navigating the Omneon MediaGrid Performance Statistics**

The user interface for Omneon MediaGrid Performance monitoring consists of the following elements (see *Figure 19–2*):

- The **Banner** includes the product name, the name of the user, and the following menus:
  - **Tools:** The Tools menu allows you to show or hide the Preview Pane and clear cookies which may accumulate if the Performance Monitoring window is opened frequently.



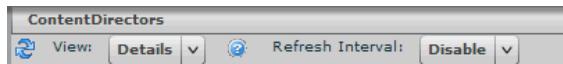
- **Help:** The Help menu provides the following functions:
  - **Help:** Displays the SystemManager online help.
  - **About:** Displays the SystemManager version information.

- An **Expandable Directory** in the left-hand column allows you to view performance statistics for all Clusters at the top level, individual clusters at the next level, all ContentDirectors, ContentServers, ContentBridges, and disk drives within a cluster at the next level, and at the lowest level, details for individual ContentDirectors, ContentServers, ContentBridges, and disk drives. The selected item is indicated with a light gray bar.
- The **Content Pane** shows the performance data in graphs and/or tables for the selected item. The Data Section is scroll-able both vertically and horizontally.



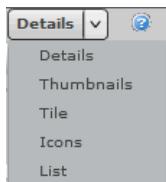
**NOTE:** The columns in the Content Pane can be resized.

- A **Data Point** appears when you move your cursor over an element in a performance graph and shows details about a certain point in that graph.
- The **Title Bar** shows details for the selected item from the directory in the left-hand column.
- The **Toolbar** appears above the Content Pane, and depending on the selected component, may contain buttons for basic tasks that can be performed on the current page including refreshing the data.



The following buttons and menus may appear in the Toolbar:

- The **Refresh** icon can be used to refresh your system information.
- The **Details** menu provides different ways to display and identify the information in the Content Pane. The available views are **Details**, **Thumbnails**, **Tile**, **Icons**, and **List**.



- The **Details** icon, next to the Details menu, provides a way to customize the information shown in the Content Pane. Click the Details icon to open the **Choose Details** dialog box. All details are selected by default. If you wish to remove a detail from view, uncheck that option, and then click **OK**.



- ❑ The **Refresh Interval** menu allows you to select the frequency with which the browser refreshes. You can choose between **Disabled**, **Every 30 seconds**, **Every 1 minute**, or **Every 5 minutes**.
- The **Preview Pane** appears when an individual ContentDirector, ContentServer, ContentBridge, or disk drive is selected from the Content Pane. This pane shows detailed information for the selected component.

ContentServer : MGR-2:CSS01223	
<b>Properties</b>	<b>Network Interfaces</b>
Operational Status	OK
IP Address1	10.4.159.116
IP Address2	10.4.168.116
Diskspace	Total: 0.99 TB, Free: 0.95 TB
Memory Util	Total Mem: 207454 KB Free Mem: 1253100 KB
Writes	0
CPU Load	0.08, 0.15, 0.14 (over 1, 5, 15 minutes)
Reads	0
Re-Replications	0

7 record(s). Refreshed at 10:03:36 AM, Wed Jul 15 2009 | Clusters: 1

- The **Footer Information** at the bottom of the page displays the time date at which the page was last refreshed, and in the right-hand corner, displays the total number of clusters in your system.

## Viewing Performance Statistics for Clusters

### Viewing Performance Statistics for All Clusters

Click the **All Clusters** folder to view performance data for all the clusters in your Omneon MediaGrid System. *Figure 19–3* shows a sample of the All Clusters view.

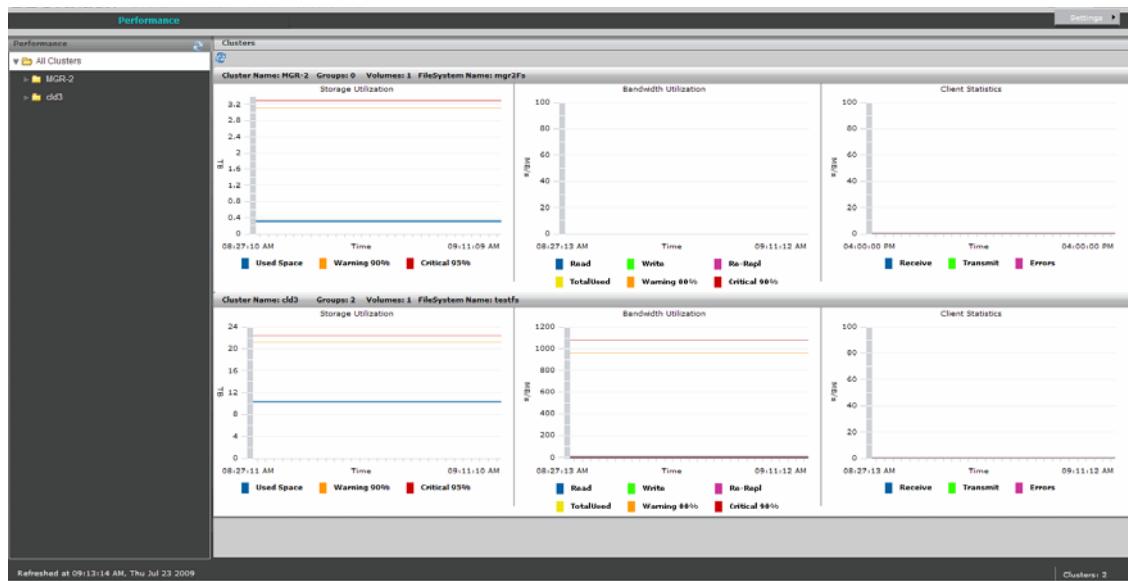


Figure 19-3: Viewing All Clusters



**NOTE:** You may need to scroll to the right to view all the graphs on this page, and scroll down to view all the clusters.

In the title bar for each cluster you can view the following information:

- **Cluster Name:** Name of the cluster.
- **Groups:** Number of groups in the cluster.
- **Volumes:** Number of volumes in the cluster.
- **FileSystem Name:** Name of the file system.

The **Storage Utilization** graph displays the following information:

- The **blue** line indicates the total disk space in TB used for each cluster.
- The **orange** line indicates the Warning level of storage usage for this cluster. If this Warning level is reached, a corresponding Warning alarm will be generated in SystemManager. If that occurs, Harmonic recommends that you add more storage to your system.
- The **red** line indicates the Critical level of storage usage for this cluster. If this Critical level is reached, a corresponding Critical alarm will be generated in SystemManager. If that occurs, Harmonic recommends that you add more storage to your system.

The **Bandwidth Utilization** graph displays the following information:

- The **blue** line indicates the average bandwidth in MB/s used for Reads.
- The **green** line indicates the average bandwidth in MB/s used for Writes.
- The **pink** line indicates the average bandwidth in MB/s used for Re-Replication.
- The **yellow** line indicates the Total bandwidth used for reads, writes, and replications in an active cluster.

- The **orange** line indicates the Warning level of bandwidth usage for this cluster. If this Warning level is reached, a corresponding Warning alarm will be generated in SystemManager.
- The **red** line indicates the Critical level of bandwidth usage for this cluster. If this Critical level is reached, a corresponding Critical alarm will be generated in SystemManager.

The **Client Statistics** graph displays the following information:

- The **blue** line indicates the receive packets in MB/s of all clients accessing the cluster.
- The **green** line indicates the transmit packets in MB/s of all clients accessing the cluster.
- The **pink** line indicates the error packets in MB/s of all clients accessing the cluster.

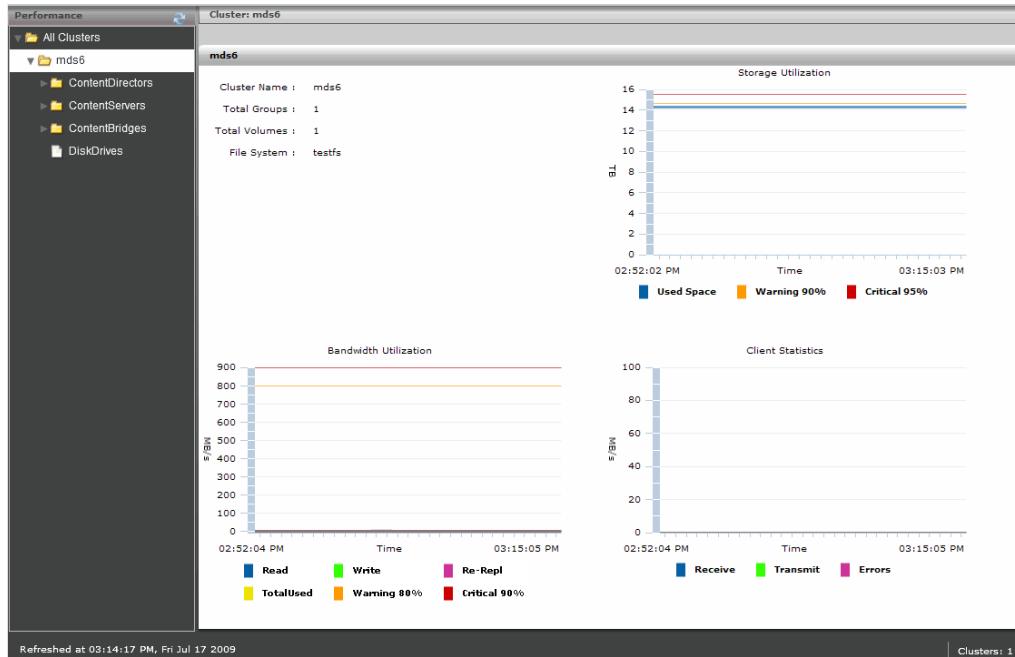


**NOTE:** To view specific data points in a graph, move your cursor over the element you wish to view.

The All Clusters page refreshes automatically every three minutes.

### Viewing Performance Statistics for a Single Cluster

In the left-hand column, click the cluster that you wish to view. The data for that individual cluster is displayed, as shown in *Figure 19–4*.



**Figure 19–4: Viewing a Single Cluster**

The performance statistics displayed on this page are identical to the statistics for the same cluster shown on the All Clusters page. For a description of the individual graphs and fields, refer to [Viewing Performance Statistics for All Clusters](#).

The Single Cluster page refreshes automatically every three minutes.

## Viewing Performance Statistics for ContentDirectors

### Viewing Performance Statistics for All ContentDirectors in a Cluster

To view statistics for all ContentDirectors in a cluster, click the individual cluster in the left-hand column, and then click the **ContentDirectors** folder. *Figure 19–5* shows a sample of the ContentDirectors page.

Name	IP Address1	IP Address2	Version	Status	Model Number	Serial Number	CPU Load	Memory Util
cld3-1	10.4.134.200	10.4.135.200	2.2.3-20090722	Connected -- Logged in as Administrator -- Error Alarm	CLD1000-A	HBWXHF1	0.18, 0.10, 0.08 (over 1, 5, 15 minutes)	Total Mem: 8174384 KB Free Mem: 1490488 KB
cld3-2	10.4.134.201	10.4.135.201	2.2.3-20090722	Connected -- Logged in as Administrator -- Error Alarm	CLD1000-A	3CWXHF1	0.01, 0.05, 0.06 (over 1, 5, 15 minutes)	Total Mem: 8174384 KB Free Mem: 2410972 KB

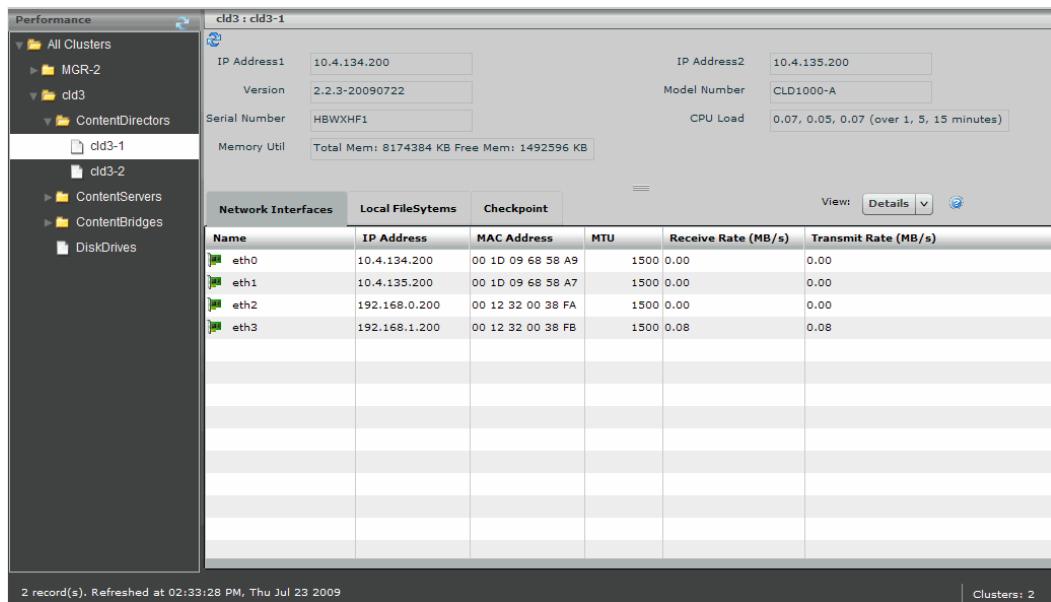
**Figure 19–5:** Viewing All ContentDirectors in a Cluster

The following summary information is displayed for each ContentDirector:

- **Name:** The assigned name of the ContentDirector.
- **IP Address1:** Displays one of the ContentDirector's IP addresses.
- **IP Address2:** Displays one of the ContentDirector's IP addresses.
- **Version:** The version of firmware installed on the unit.
- **Status:** Current network connection status.
- **Model Number:** The manufacturer's model number assigned to the unit.
- **Serial Number:** The manufacturer's serial number assigned to the unit.
- **CPU Load:** This displays the system load average for the past 1 minute, 5 minutes, and 15 minutes.
- **Memory Util:** The total memory of the ContentDirector, and the total available memory in KB.

### Viewing Performance Statistics for a Single ContentDirector

To view statistics for an individual ContentDirector, double-click the icon for a single ContentDirector in the left-hand column. *Figure 19–6* shows a sample of a single ContentDirector.



**Figure 19–6: Viewing a Single ContentDirector**

In the top half of the Content pane, the following information is displayed:

- **IP Address1:** IP address of the eth0 and eth1 network interfaces.
- **IP Address2:** IP address of the eth2 and eth3 network interfaces.
- **Version:** Version of MediaGrid firmware installed.
- **Model Number:** The manufacturer's model number assigned to the unit.
- **Serial Number:** The manufacturer's serial number assigned to the unit.
- **CPU Load:** Displays the system load averages for the past 1, 5, and 15 minutes on the unit.
- **Memory Util:** Displays the total real memory, and the total free memory for the unit.

Under the **Network Interfaces** tab, the following information is displayed:

- **Name:** Lists each Ethernet card in the ContentDirector.
- **IP Address:** The IP address assigned to each Ethernet card.
- **MAC Address:** The unique MAC address for each Ethernet card.
- **MTU:** Shows the maximum size of Ethernet packets. An MTU greater than 1500 bytes indicates that Jumbo Frames are enabled.
- **Receive Rate (MB/s):** The receive rate in megabytes per second for each interface.
- **Transmit Rate (MB/s):** The transmit rate in megabytes per second for each interface.

Under the **Local FileSystems** tab, the following information is displayed:

- **Name:** The name of the local file system.
- **Total Space:** The total local storage space
- **Used Space:** The amount of local storage space used.

- **Available Space:** The amount of local space available.
- **Used Percent:** Percentage of storage space used.

The **Checkpoint** tab provides the following information:

- **Last Successful Checkpoint:** The date and time of the last successful checkpoint.
- **Last Failed Checkpoint:** The date and time of the last failed checkpoint.
- **Last Attempted Checkpoint:** The date and time of the last attempted checkpoint.
- **Next Checkpoint:** The date and time of the next scheduled checkpoint.
- **Start Day:** The start day of the scheduled checkpoint.
- **Start Time:** The start time of the scheduled checkpoint.
- **Interval:** The interval between checkpoints.
- **State:** Displays whether checkpoints are enabled or disabled.

For general information on Checkpoints, refer to [About Checkpoints and Scheduling Checkpoints](#). For step by step instructions on how to configure a Checkpoint schedule, refer to [Enabling and Configuring Checkpoint Schedules](#).

## Viewing Performance Statistics for ContentServers

### Viewing Performance Statistics for All ContentServers in a Cluster

To view statistics for all ContentServers in a cluster, click the individual cluster in the left-hand column, and then click the **ContentServers** folder. *Figure 19-7* shows a sample of the ContentServers page.

Name	Operational Status	IP Address1	IP Address2	Version	DiskSpace	CPU Load	Memory Util	Reads	Writes	Re-Repllications
cld3:CSS01332	OK	10.4.135.54	10.4.134.56	2.2.3-20090722	Total: 1.99 TB, Free: 1.13 TB	0.04, 0.09, 0.08 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 1060516 KB	0	0	0
cld3:CSS01284	OK	10.4.135.57	10.4.134.136	2.2.3-20090722	Total: 1.99 TB, Free: 1.12 TB	0.11, 0.10, 0.09 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 1060516 KB	0	0	0
cld3:CSS01632	OK	10.4.135.50	10.4.134.133	2.2.3-20090722	Total: 1.99 TB, Free: 1.12 TB	0.09, 0.09, 0.09 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 1066840 KB	0	0	0
cld3:CSS01606	OK	10.4.135.52	10.4.134.72	2.2.3-20090722	Total: 1.99 TB, Free: 1.12 TB	0.05, 0.07, 0.08 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 1113940 KB	0	0	0
cld3:CSS01120	OK	10.4.135.60	10.4.134.63	2.2.3-20090722	Total: 1.99 TB, Free: 1.11 TB	0.19, 0.10, 0.09 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 387004 KB	0	0	0
cld3:CSS01348	OK	10.4.135.59	10.4.134.50	2.2.3-20090722	Total: 1.99 TB, Free: 1.11 TB	0.09, 0.09, 0.09 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 426516 KB	0	0	0
cld3:CSS01295	OK	10.4.135.55	10.4.134.68	2.2.3-20090722	Total: 1.99 TB, Free: 1.10 TB	0.05, 0.08, 0.08 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 1072724 KB	0	0	0
cld3:CSS01339	OK	10.4.135.58	10.4.134.59	2.2.3-20090722	Total: 1.99 TB, Free: 1.09 TB	0.01, 0.06, 0.05 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 1072724 KB	0	0	0
cld3:CSS01104	OK	10.4.135.56	10.4.134.65	2.2.3-20090722	Total: 1.99 TB, Free: 1.09 TB	0.05, 0.07, 0.08 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 1072724 KB	0	0	0
cld3:CSS01210	OK	10.4.135.53	10.4.134.71	2.2.3-20090722	Total: 1.99 TB, Free: 1.09 TB	0.05, 0.07, 0.08 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 1072724 KB	0	0	0
cld3:CSS01345	OK	10.4.135.57	10.4.134.66	2.2.3-20090722	Total: 1.99 TB, Free: 1.09 TB	0.05, 0.07, 0.08 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 1072724 KB	0	0	0
cld3:CLB01245	OK	10.4.135.54	10.4.134.67	2.2.3-20090722	Total: 1.99 TB, Free: 1.09 TB	0.05, 0.07, 0.08 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 1072724 KB	0	0	0
DiskDrives	OK									
cld3:CSS01348	OK	10.4.135.58	10.4.134.59	2.2.3-20090722	Total: 1.99 TB, Free: 1.09 TB	0.01, 0.06, 0.05 (over 1, 5, 15 minutes)	Total Mem: 2074544 KB Free Mem: 1072724 KB	0	0	0

**Figure 19-7: Viewing all ContentServers in a Cluster**

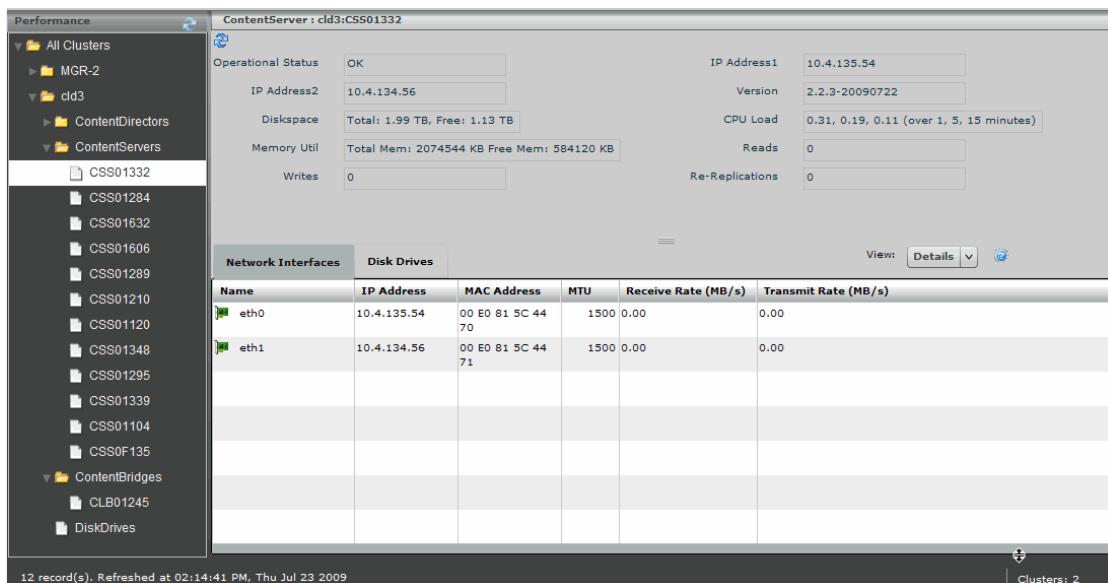
The following summary information is displayed for each ContentServer:

- **Name:** The assigned name of the ContentServer shown in the following format: <name of cluster>:<name of ContentServer>.

- **Operational Status:** Displays the current network connection status.
- **IP Address1:** Displays one of the ContentServer's IP addresses.
- **IP Address2:** Displays one of the ContentServer's IP addresses.
- **Version:** Version of firmware currently installed.
- **Diskspace:** The total disk space and total available disk space in TB.
- **CPU Load:** Displays the system load average for the past 1 minute, 5 minutes, and 15 minutes.
- **Memory Util:** The total memory of the ContentServer, and the total available memory in KB.
- **Reads:** Displays aggregate bandwidth usage in megabytes per second for drive "read" requests received by the ContentServer.
- **Writes:** Displays aggregate bandwidth usage in megabytes per second for drive "write" requests received by the ContentServer
- **Re-Replications:** Displays aggregate bandwidth usage in megabytes per second for re-replication requests received by the ContentServer.

### Viewing Performance Statistics for a Single ContentServer

To view statistics for an individual ContentServer, double-click the icon for the ContentServer you want to view. *Figure 19–6* shows a sample of a single ContentServer.



**Figure 19–8: Viewing a Single ContentServer**

In the top half of the Content pane, the following information is provided:

- **Operational Status:** Current network connection status.
- **IP Address1:** The IP address assigned to the eth0 Ethernet card.
- **IP Address2:** The IP address assigned to the eth1 Ethernet card.
- **Version:** Displays the MediaGrid firmware version.
- **Diskspace:** The total disk space and total available disk space in TB

- **CPU Load:** Displays the system load average for the past 1 minute, 5 minutes, and 15 minutes.
- **Memory Util:** The total memory of the ContentServer, and the total available memory in KB.
- **Reads:** Displays aggregate bandwidth usage in megabytes per second for drive “read” requests received by the ContentServer.
- **Writes:** Displays aggregate bandwidth usage in megabytes per second for drive “write” requests received by the ContentServer
- **Re-Replications:** Displays aggregate bandwidth usage in megabytes per second for re-replication requests received by the ContentServer.

Under the **Network Interfaces** tab, the following information is displayed:

- **Name:** Lists the name of each Ethernet card in the ContentServer.
- **IP Address:** The IP address assigned to each Ethernet card.
- **MAC Address:** The unique MAC address for each Ethernet card.
- **MTU:** Shows the maximum size of Ethernet packets. An MTU greater than 1500 bytes indicates that Jumbo Frames are enabled.
- **Receive Rate (MB/s):** The receive rate in megabytes per second for each interface.
- **Transmit Rate (MB/s):** The transmit rate in megabytes per second for each interface.

Under the **Disk Drives** tab, the following information is displayed:

- **Name:** Displays the slot ID, which is the numeric identifier that represents the physical position for each disk drive in the ContentServer.
- **Operational Status:** Displays the current operational status for each disk drive.
- **Firmware Version:** Displays the firmware version within this drive.
- **Total Space:** Displays the total space available for each drive.
- **Used Space:** Displays the total disk space in use for each disk drive.
- **Smart Errors:** Displays the number of SMART Errors associated with each disk drive.
- **Slice Count:** Displays the total number of slices in each disk drive.
- **Bad Slices:** Displays the number of bad slices for each drive.
- **ContentServer Name:** Displays the name of the ContentServer.
- **Cluster Name:** Displays the name of the Cluster.

## Viewing Performance Statistics for ContentBridges

### Viewing Performance Statistics for All ContentBridges in a Cluster

To view statistics for all ContentBridges in a cluster, click the individual cluster in the left-hand column, and then click the **ContentBridges** folder. *Figure 19–9* shows a sample of the ContentBridges page.

The screenshot shows a software interface titled 'Performance' on the left. In the center, there is a table titled 'ContentBridges' with one record. The table has columns: Name, IP Address1, IP Address2, Version, Status, Model Number, Serial Number, CPU Load, and Memory Util. The single row contains the following data:

Name	IP Address1	IP Address2	Version	Status	Model Number	Serial Number	CPU Load	Memory Util
CLB01245	10.4.135.67	10.4.134.54	2.2.2.1-20090529	Connected	CLB1000	01245	0.03, 0.07, 0.01 (over 1, 5, 15 minutes)	Total Mem: 2074588 KB Free

At the bottom of the interface, it says '1 record(s). Refreshed at 02:12:42 PM, Thu Jul 23 2009' and 'Clusters: 2'.

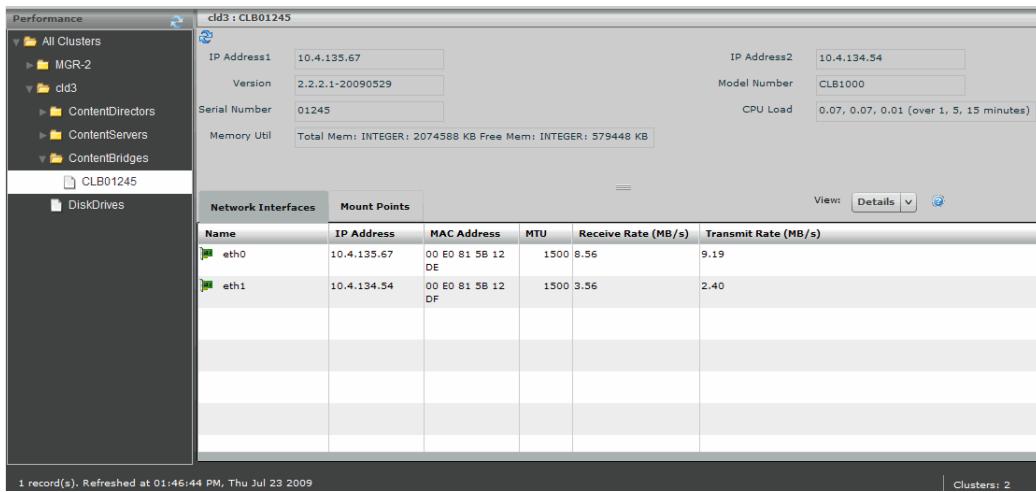
Figure 19–9: Viewing all ContentBridges in a Cluster

The following summary information is displayed for each ContentBridge:

- **Name:** Displays the assigned name for the unit.
- **IP Address1:** Displays one of the ContentBridge's IP addresses.
- **IP Address2:** Displays one of the ContentBridge's IP addresses.
- **Version:** Version of firmware version currently installed on the unit.
- **Status:** Current network connection status.
- **Model Number:** The manufacturer's model number assigned to the unit.
- **Serial Number:** The manufacturer's serial number assigned to the unit.
- **CPU Load:** The system load average for the past 1 minute, 5 minutes, and 15 minutes.
- **Memory Util:** The total memory of the ContentBridge, and the total available memory in KB.

### Viewing Performance Statistics for a Single ContentBridge

To view statistics for an individual ContentBridge, in the left-hand column, double-click the icon for the ContentBridge you want to view. [Figure 19–10](#) shows a sample of a single ContentBridge.



**Figure 19–10: Viewing a Single ContentBridge**

The top half of the Content pane displays the same information described in the previous section.

In the **Network Interfaces** section, the following information is displayed:

- **Name:** Lists each Ethernet card in the ContentBridge.
- **IP Address:** The IP address assigned to each Ethernet card.
- **MAC Address:** The unique MAC address for each Ethernet card.
- **MTU:** Shows the maximum size of Ethernet packets. An MTU greater than 1500 bytes indicates that Jumbo Frames are enabled.
- **Receive Rate (MB/s):** The receive rate in megabytes per second for each interface.
- **Transmit Rate (MB/s):** The transmit rate in megabytes per second for each interface.

The **Mount Points** section lists each of the mount points for the selected ContentBridge. A mount point is the physical location in the directory structure where files are stored in the file system.

## Viewing Performance Statistics for Disk Drives

To view statistics for all disk drives in a cluster, click the individual cluster in the left-hand column, and then click the **Disk Drives icon**. [Figure 19–9](#) shows a sample of the Disk Drives page.

Name	Operational Status	Firmware Version	Total Space	Used Space	Smart Errors	Slice Count	Bad Slices	ContentServer Name	Cluster Name
cld3:CSS01332:1	Online	3.AEK	500107 MB	248353 MB	0	117384	0	CSS01332	cld3
cld3:CSS01332:2	Online	3.AEK	500107 MB	247908 MB	0	117171	0	CSS01332	cld3
cld3:CSS01332:3	Online	3.AEK	500107 MB	248299 MB	0	117361	0	CSS01332	cld3
cld3:CSS01332:4	Online	3.AEK	500107 MB	109394 MB	0	51348	0	CSS01332	cld3
cld3:CSS01284:1	Online	3.AEK	500107 MB	216171 MB	0	102127	0	CSS01284	cld3
cld3:CSS01284:2	Online	3.AEK	500107 MB	216142 MB	0	102112	0	CSS01284	cld3
cld3:CSS01284:3	Online	3.AEK	500107 MB	216125 MB	0	102107	0	CSS01284	cld3
cld3:CSS01284:4	Online	3.AEK	500107 MB	216153 MB	0	102102	0	CSS01284	cld3
cld3:CSS01632:1	Online	K2AOAB0A	500107 MB	216253 MB	0	102136	0	CSS01632	cld3
cld3:CSS01632:2	Online	K2AOA51A	500107 MB	216222 MB	0	102112	0	CSS01632	cld3
cld3:CSS01632:3	Online	K2AOAB0A	500107 MB	216133 MB	0	102090	0	CSS01632	cld3
cld3:CSS01632:4	Online	K2AOA51A	500107 MB	216197 MB	0	102108	0	CSS01632	cld3
cld3:CSS01606:1	Online	K2AOA51A	500107 MB	216188 MB	0	102099	0	CSS01606	cld3
cld3:CSS01606:2	Online	K2AOAB0A	500107 MB	216218 MB	0	102104	0	CSS01606	cld3
cld3:CSS01606:3	Online	K2AOAB0A	500107 MB	216214 MB	0	102110	0	CSS01606	cld3
cld3:CSS01606:4	Online	K2AOA51A	500107 MB	216218 MB	0	102133	0	CSS01606	cld3
cld3:CSS01289:1	Online	K2AOAB0A	500107 MB	219010 MB	0	103423	0	CSS01289	cld3
cld3:CSS01289:2	Online	K2AOA51A	500107 MB	218950 MB	0	103408	0	CSS01289	cld3
cld3:CSS01289:3	Online	K2AOAB0A	500107 MB	218974 MB	0	103420	0	CSS01289	cld3
cld3:CSS01289:4	Online	K2AOAB0A	500107 MB	218894 MB	0	103398	0	CSS01289	cld3
cld3:CSS01210:1	Online	K2AOA51A	500107 MB	218969 MB	0	103408	0	CSS01210	cld3
cld3:CSS01210:2	Online	K2AOA51A	500107 MB	218976 MB	0	103414	0	CSS01210	cld3
cld3:CSS01210:3	Online	K2AOA51A	500107 MB	218969 MB	0	103410	0	CSS01210	cld3
cld3:CSS01210:4	Online	K2AOA51A	500107 MB	218940 MB	0	103417	0	CSS01210	cld3

Figure 19–11: Viewing all Disk Drives in a Cluster

The following summary information is displayed for each disk drive:

- **Name:** displays the name of the disk drive in the following format: <name of cluster>:<name of ContentServer>:<slot ID>
- **Operational Status:** Displays the current operational status for each disk drive.
- **Firmware Version:** Displays the firmware version for each disk drive. This information is used primarily for debugging purposes.
- **Total Space:** Displays the total space available for each drive.
- **Used Space:** Displays the total disk space in use for each disk drive.
- **Smart Errors:** Displays the number of SMART errors associated with each disk drive
- **Slice Count:** Displays the total number of slices in each disk drive.
- **Bad Slices:** Displays the number of bad slices for each drive.



**NOTE:** When the data integrity of a slice is compromised, it is considered a "bad slice.". This could be due to corruption in data content, missing data, or if the slice size is different from expected value.

- **ContentServer Name:** Name of the associated ContentServer for each disk drive.
- **Cluster Name.** Name of the associated cluster for each disk drive.

To view the details for an individual disk drive in the preview pane, click that disk in the Content pane. See [Figure 19–12](#).

DriveInfo : cld3:CSS01332:1			
Properties			
Operational Status	Online	Firmware Version	3.AEK
Total Space	500107 MB	Used Space	248353 MB
Smart Errors	0	Slice Count	117384
Bad Slices	0	ContentServer Name	CSS01332
Cluster Name	cld3		

Figure 19–12: Disk Drive Details

## Part IV: ProBrowse

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# Chapter 20

## ProBrowse Configuration

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This chapter provides procedures for configuring, operating, and managing ProBrowse Systems using the SystemManager application. Choose from the following topics:

- [\*Viewing ProBrowse Servers and Generators in a System\*](#)
- [\*Configuring ProBrowse Proxy Servers\*](#)
- [\*Viewing Settings for ProBrowse Proxy Servers\*](#)
- [\*Viewing the Status of ProBrowse Servers\*](#)
- [\*Viewing Properties for ProBrowse Servers\*](#)
- [\*Viewing Log Files for ProBrowse Servers\*](#)
- [\*Viewing Properties for ProBrowse Generators\*](#)
- [\*Viewing Log Files for ProBrowse Generators\*](#)
- [\*Performing Management and Troubleshooting on ProBrowse Systems\*](#)
- [\*Upgrading ProBrowse System Firmware\*](#)



**NOTE:** Refer to the *Omneon ProBrowse System Installation and User's Guide* for detailed instructions on installing a ProBrowse System.

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### Viewing ProBrowse Servers and Generators in a System

To view ProBrowse Servers and Generators:

1. Click the **Configuration Tab** at the top of the SystemManager page, and then click the **Servers** icon in the **ProBrowse** section to display the **Servers** page as shown in [\*Figure 20-1\*](#).

The screenshot shows the ProBrowse interface with two main sections: 'ProBrowse Servers' and 'ProBrowse Generators'. Both sections feature a table with columns for Name, IP Address, IP Address 2, Network Status, System Up Time, Config Page, Status Page, View Logs, Services, System Management, Wink Status, and Select.

**ProBrowse Servers Data:**

Name	IP Address	IP Address 2	Network Status	System Up Time	Config Page	Status Page	View Logs	Services	System Management	Wink Status	Select
browsesvr44_20	10.30.44.20		Connected	20 days, 19:29:22.22	<a href="#">Config</a>	<a href="#">Status</a>	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	<a href="#">System Management</a>	Off	<input type="checkbox"/>
browsesvr73_20	10.35.73.20		Not responding -- Error Alarm	8 days, 19:55:36.87	<a href="#">Config</a>	<a href="#">Status</a>	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	<a href="#">System Management</a>	Off	<input checked="" type="checkbox"/>
browsesvr92_20	10.30.92.20	10.30.92.19	Connected	4 days, 19:02:42.27	<a href="#">Config</a>	<a href="#">Status</a>	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	<a href="#">System Management</a>	Off	<input type="checkbox"/>
browsesvr66_20	10.35.66.20	10.35.66.52	Connected	63 days, 1:31:11.34	<a href="#">Config</a>	<a href="#">Status</a>	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	<a href="#">System Management</a>	Off	<input type="checkbox"/>
browsesvr66_58	10.35.66.58		Not responding -- Error Alarm	0:58:37.53	<a href="#">Config</a>	<a href="#">Status</a>	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	<a href="#">System Management</a>	Off	<input checked="" type="checkbox"/>
browsesvr_	10.35.66.59	10.35.66.59	Connected	6 days, 19:12:46.87	<a href="#">Config</a>	<a href="#">Status</a>	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	<a href="#">System Management</a>	Off	<input type="checkbox"/>

**Buttons at the bottom of the Servers section:**

- Wink On
- Wink Off
- Select all
- Clear

**ProBrowse Generators Data:**

Name	IP Address	IP Address 2	Network Status	System Up Time	View Logs	Services	Wink Status	Select
browsegen44_21	10.30.44.21		Connected	5 days, 18:48:17.97	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	Off	<input type="checkbox"/>
browsegen66_32	10.35.66.32		Connected -- Warning Alarm	19:18:52.50	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	Off	<input type="checkbox"/>
browsegen92_21	10.30.92.21		Connected	4 days, 19:27:08.91	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	Off	<input type="checkbox"/>
browsegen92_22	10.30.92.22		Connected	5 days, 18:59:55.80	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	Off	<input type="checkbox"/>
browsegen92_23	10.30.92.23		Connected	5 days, 18:36:08.90	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	Off	<input type="checkbox"/>
browsegen72_21	10.30.72.21		Connected	6 days, 19:24:53.82	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	Off	<input type="checkbox"/>
browsegen72_22	10.30.72.22		Connected	6 days, 19:24:54.94	<a href="#">Logs</a>	<a href="#">Start</a> <a href="#">Stop</a>	Off	<input type="checkbox"/>

**Buttons at the bottom of the Generators section:**

- Wink On
- Wink Off
- Select all
- Clear

Refresh Interval for this page is 30 seconds.

**Figure 20–1: ProBrowse—Server List**

You can view the following information in the **ProBrowse Servers** section:

- **Name:** Displays the name of the Server.
- **IP Address:** Displays the Server's IP address.
- **IP Address 2:** Displays a secondary IP address for the Server.
- **Network Status:** Displays the Server's current network status, such as "Connected," "Not Responding," "Error," "Deleted," "Starting Upgrade" etc.
- **System Up Time:** Displays the time the component has been "up and running" in days, hours, minutes, seconds, and fractions of seconds.
- **Config Page (Hyperlink):** Click this link to access the ProBrowse Server Configuration page, on which you enter the Proxy Directory, EFS (Extended File System) Host access, and the location of the Clip Directories. This page is used to tell ProBrowse Servers and ProBrowse Generators about File Systems for which ProBrowse components should generate proxy versions of clips. Refer to [Configuring ProBrowse Proxy Servers](#).
- **Status Page (Hyperlink):** Click this link to access the ProBrowse Server Status page, which shows several server properties. If the Server is not in the Connected state, the Status page may not launch properly, instead you will see the message "No page found". When not in the Connected, the server may not attain the Connected state because it is unresponsive on the network, or software components are not working properly.

- **View Logs:** Click to view the log files and associated properties for the selected Server.
- **Services (Start/Stop buttons):** Click to start or stop the ProBrowse Server's services.



**NOTE:** The **Start Services** action starts the appropriate services. If some or all services are already running, and a transcode is in progress, that transcode will be stopped and later restarted. The **Start** button should not be used unless there is an issue with the current state of the services. Note that the **Status** link can be used to examine the current state of the services for ProBrowse and/or ProXchange.

- **System Management (Hyperlink):** Click this link to access the Dell OpenManage log in page. Once logged in, you can view information about your system.
- **Wink Status:** Shows whether the Wink function is enabled on the unit. When Wink is On, front and back panel LEDs flash allowing you to quickly identify a ProBrowse Server. Click the Wink buttons at the bottom of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select a ProBrowse Server.
- **Wink on (button):** Click to change the wink status of all the selected units to On.
- **Wink off (button):** Click to change the wink status of all the selected units to Off.
- **Select all (button):** Click to select all the ProBrowse Servers.
- **Clear (button):** Click to deselect all ProBrowse Servers.

You can view the following information in the **ProBrowse Generators** section:

- **Name:** Displays the name of the ProBrowse Generator. ProBrowse Generators create low-bandwidth copies (proxies) of clips for quicker viewing using the ProBrowse System.
- **IP Address:** Displays the IP address of each ProBrowse Generator.
- **Network Status:** Displays the network status of the ProBrowse Generator.
- **System Up Time:** Displays the time the component has been “up and running” in days, hours, minutes, seconds, and fractions of seconds.
- **View Logs:** Click to view the log file associated with the selected Generator.
- **Services (Start/Stop Buttons):** Click to start or stop the ProBrowse Generator's services.
- **Wink Status:** Shows whether the Wink function is enabled on the unit. When Wink is On, front and back panel LEDs flash allowing you to quickly identify a ProBrowse Generator. Click the Wink buttons at the bottom of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select a ProBrowse Generator.
- **Wink on (button):** Click to change the wink status of all the selected units to On.
- **Wink off (button):** Click to change the wink status of all the selected units to Off.
- **Select all (button):** Click to select all the ProBrowse Generators.
- **Clear (button):** Click to deselect all ProBrowse Generators.

## Configuring ProBrowse Proxy Servers

Configuring a ProBrowse System involves selecting the Spectrum Host(s), or Omneon MediaGrid File System through which the ProBrowse Server(s) accesses clips and specifying the location of the clip directories using the SystemManager application. Once the ProBrowse System begins to create proxy versions of clips, use the ProBrowse Desktop applications to view and manipulate clips.

Following are instructions on how to configure full resolution Servers with which the ProBrowse Server communicates. Servers which can be configured as Proxy Servers include Spectrum MediaDirectors and Omneon MediaGrid ContentServers.

**To configure Proxy Server settings:**

1. Complete all of the installation procedures for the ProBrowse System detailed in the *Omneon ProBrowse System Installation and User's Guide*.
2. Click the **Configuration Tab** at the top of the SystemManager window, and then click the **Servers** icon in the **ProBrowse** section to access the **Servers** page.
3. Verify that all ProBrowse System components (the ProBrowse Servers and ProBrowse Generators) have been discovered and are displayed on the **Servers** page. The Network status of all components should be **Connected**.
4. In the **ProBrowse Servers** section, click the **Config Page** hyperlink to access the **ProBrowse Server Configuration** page for a particular ProBrowse Server.
5. The **ProBrowse Server Configuration** page is divided into two sections; one for Spectrum File Systems proxy configuration and one for Omneon MediaGrid File Systems proxy configuration, if an Omneon MediaGrid is detected on the network. *Figure 20-2* illustrates the Spectrum File Systems proxy configuration section. *Figure 20-3* illustrates the proxy configuration for Omneon MediaGrid.

Proxy Configuration for Spectrum File Systems																																										
ProBrowse File System Name	File System Name	Spectrum		Proxy Access	Config	ProBrowse File System Status																																				
		GUID	EFS Host Usage																																							
	fs0	3bc37f49-0404a401	<table border="1"> <thead> <tr> <th>None</th> <th>Sync</th> <th>Proxy</th> <th>Host</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td>10.30.50.99</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td>10.30.51.99</td> </tr> </tbody> </table>	None	Sync	Proxy	Host	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.50.99	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	10.30.51.99	Read: Not set Write: Not set	<a href="#">Config Detail</a>	Disabled																								
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	myFS	5fc68304-0b003202	<table border="1"> <thead> <tr> <th>None</th> <th>Sync</th> <th>Proxy</th> <th>Host</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td>10.35.85.104</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td>10.35.85.104</td> </tr> </tbody> </table>	None	Sync	Proxy	Host	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.85.104	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	10.35.85.104	Read: Not set Write: Not set	<a href="#">Config Detail</a>	Disabled																								
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D2-103_104	FS	a1294026-f042e01	<table border="1"> <thead> <tr> <th>None</th> <th>Sync</th> <th>Proxy</th> <th>Host</th> </tr> </thead> <tbody> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td>10.30.44.98</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td>10.30.44.99</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td>10.35.66.105</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td>10.35.66.106</td> </tr> </tbody> </table>	None	Sync	Proxy	Host	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	10.30.44.98	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.44.99	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	10.35.66.105	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.66.106	Read: 10.30.92.20 Write: 10.30.92.20	<a href="#">Config Detail</a>	Enabled																
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	ClipDB	efca0775-05001401	<table border="1"> <thead> <tr> <th>None</th> <th>Sync</th> <th>Proxy</th> <th>Host</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td>10.35.66.53</td> </tr> </tbody> </table>	None	Sync	Proxy	Host	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.66.53	Read: Not set Write: Not set	<a href="#">Config Detail</a>	Disabled																												
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Figure 20–2: Proxy Configuration for Spectrum File Systems

Proxy Configuration for MediaGrid File Systems													
ProBrowse File System Name	MediaGrid				Proxy Access	Config	ProBrowse File System Status						
	Cluster	File System Name	DNS Name	Login									
	CLD19	testfs		<table border="1"> <tbody> <tr> <td>Username: Not set</td> <td>Read: Not set</td> </tr> <tr> <td>Password: Not set</td> <td>Write: Not set</td> </tr> <tr> <td>Domain: Not set</td> <td></td> </tr> </tbody> </table>	Username: Not set	Read: Not set	Password: Not set	Write: Not set	Domain: Not set		Read: Not set Write: Not set	<a href="#">Config Detail</a>	Disabled
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Password: Not set	Write: Not set												
Domain: Not set													
cld10	cld10	testfs	10.4.132.200	<table border="1"> <tbody> <tr> <td>Username: omneon</td> <td>Read: //10.4.132.200/testfs/ProBrowseProxy/proxy200</td> </tr> <tr> <td>Password: *****</td> <td>Write: //10.4.132.200/testfs/ProBrowseProxy/proxy200</td> </tr> <tr> <td>Domain: Not set</td> <td></td> </tr> </tbody> </table>	Username: omneon	Read: //10.4.132.200/testfs/ProBrowseProxy/proxy200	Password: *****	Write: //10.4.132.200/testfs/ProBrowseProxy/proxy200	Domain: Not set		Read: //10.4.132.200/testfs/ProBrowseProxy/proxy200 Write: //10.4.132.200/testfs/ProBrowseProxy/proxy200	<a href="#">Config Detail</a>	Enabled
Username: omneon	Read: //10.4.132.200/testfs/ProBrowseProxy/proxy200												
Password: *****	Write: //10.4.132.200/testfs/ProBrowseProxy/proxy200												
Domain: Not set													
	cld12	testfs		<table border="1"> <tbody> <tr> <td>Username: Not set</td> <td>Read: Not set</td> </tr> <tr> <td>Password: Not set</td> <td>Write: Not set</td> </tr> <tr> <td>Domain: Not set</td> <td></td> </tr> </tbody> </table>	Username: Not set	Read: Not set	Password: Not set	Write: Not set	Domain: Not set		Read: Not set Write: Not set	<a href="#">Config Detail</a>	Disabled
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	cld15	testfs		<table border="1"> <tbody> <tr> <td>Username: Not set</td> <td>Read: Not set</td> </tr> <tr> <td>Password: Not set</td> <td>Write: Not set</td> </tr> <tr> <td>Domain: Not set</td> <td></td> </tr> </tbody> </table>	Username: Not set	Read: Not set	Password: Not set	Write: Not set	Domain: Not set		Read: Not set Write: Not set	<a href="#">Config Detail</a>	Disabled
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	cld3	testfs		<table border="1"> <tbody> <tr> <td>Username: Not set</td> <td>Read: Not set</td> </tr> <tr> <td>Password: Not set</td> <td>Write: Not set</td> </tr> <tr> <td>Domain: Not set</td> <td></td> </tr> </tbody> </table>	Username: Not set	Read: Not set	Password: Not set	Write: Not set	Domain: Not set		Read: Not set Write: Not set	<a href="#">Config Detail</a>	Disabled
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Domain: Not set													
	cld5	testfs		<table border="1"> <tbody> <tr> <td>Username: Not set</td> <td>Read: Not set</td> </tr> <tr> <td>Password: Not set</td> <td>Write: Not set</td> </tr> <tr> <td>Domain: Not set</td> <td></td> </tr> </tbody> </table>	Username: Not set	Read: Not set	Password: Not set	Write: Not set	Domain: Not set		Read: Not set Write: Not set	<a href="#">Config Detail</a>	Disabled
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	cld9	testfs		<table border="1"> <tbody> <tr> <td>Username: Not set</td> <td>Read: Not set</td> </tr> <tr> <td>Password: Not set</td> <td>Write: Not set</td> </tr> <tr> <td>Domain: Not set</td> <td></td> </tr> </tbody> </table>	Username: Not set	Read: Not set	Password: Not set	Write: Not set	Domain: Not set		Read: Not set Write: Not set	<a href="#">Config Detail</a>	Disabled
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Figure 20–3: Proxy Configuration for Omneon MediaGrid File Systems

## 6. Do one of the following:

- For Spectrum File Systems configuration, proceed to [Step 7](#).
  - For Omneon MediaGrid File Systems configuration, proceed to [Step 11](#).
7. Click Config Detail to display the **Config Detail** page for a Spectrum File System. A sample page is displayed in [Figure 20–4](#).

**Spectrum FileSystem fs0**

**General Information:**

ProBrowse File System		Spectrum		EFS Host Usage				
Name	State	File System Name	GUID	None	Sync	Proxy	Delete	Host
D02798H1	Enabled <input checked="" type="radio"/>	fs0	4e4d21ac-041c1404	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.4.178.32
	Disabled <input type="radio"/>			<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.4.178.33

**Read/Write Proxy Access:**

ProBrowse Server (Local Storage)	NIC1: 10.4.96.20		Read	Write
	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
MediaGrid	NIC2: Not present		<input type="radio"/>	<input type="radio"/>

Path: Enter the root proxy path for read and write access.  
Example: //MGrid3/testfs/ProBrowseProxy/proxy200

User Name: \_\_\_\_\_  
Password: \_\_\_\_\_  
Domain: \_\_\_\_\_

**Clip Directories Configuration:**

Defaults					Default Scene Change Sensitivities Nonlinear scales: 0=off, 1=low, 10=normal, 100+=high		Cuts	Fades
							10	10
Configuration					Directory	Cuts Sensitivity	Fades Sensitivity	
Ignore <input checked="" type="radio"/>	Sync Only <input type="radio"/>	Sync+Proxy <input type="radio"/>	Delete <input type="radio"/>	FCP	<input type="text"/>	<input type="text"/>		
Ignore <input checked="" type="radio"/>	Sync Only <input type="radio"/>	Sync+Proxy <input type="radio"/>	Delete <input type="radio"/>	FCPNRK	<input type="text"/>	<input type="text"/>		
Ignore <input checked="" type="radio"/>	Sync Only <input type="radio"/>	Sync+Proxy <input type="radio"/>	Delete <input type="radio"/>	FCP\record	<input type="text"/>	<input type="text"/>		
Ignore <input checked="" type="radio"/>	Sync Only <input type="radio"/>	Sync+Proxy <input type="radio"/>	Delete <input type="radio"/>	FCP\testESS	<input type="text"/>	<input type="text"/>		

**Figure 20–4: Spectrum File System Configuration Detail**

8. In the **General Information** section, specify as follows:
- **ProBrowse File System Name:** Enter a name for the File System here. File System names are subject to the rules and limitations mentioned in [About Naming Files and System Elements](#).



**NOTE:** A name must be assigned to the File System in order to enable the File System.

- **ProBrowse File System State:** Click to enable or disable the File System. The File System must be enabled for proxy generation to occur.
- **File System Name:** Shows the mountpoint of the File System for the selected Spectrum MediaDirector Host. This field is not user-configurable.
- **GUID:** Shows the 17 character unique ID assigned to the File System. This field is not user-configurable.
- **EFS Host Usage:** Assign usage to the Spectrum Host(s) in a ProBrowse File System as follows:
  - **None:** Click to specify that the Host is only used for metadata writing on a live clip.

- Sync:** Click to specify that the Host is used for metadata writing and file scanning activity. Proxy generation will not occur when this choice is checked.
  - Proxy:** Click to specify that the Host is used for proxy generation as well as metadata writing, and file scanning activity.
  - Delete:** Click to remove an old IP address associated with a File System. This option is usually disabled. When an old IP address is discovered for a File System, the IP address is displayed in red and the **Delete** option becomes enabled.
  - Host:** Shows the IP addresses for the associated hosts
9. In the **Read/Write Proxy Access** section, select either **ProBrowse Server (Local Storage)** or **Omneon MediaGrid**.
- If you select ProBrowse Server (Local Storage), proceed as follows:
    - Assign **Read** and **Write** access to the appropriate NIC, if more than one is present.
  - If you select Omneon MediaGrid, proceed as follows:
    - Enter the root proxy path for read and write access. Enter a DNS name as in the following example: //cld3/fred/browse, or, enter an IP address as in the following example: //10.31.74.103/browseStuff.
-  **NOTE:** DNS must be enabled on the Omneon MediaGrid system to make use of this field/feature.
- Enter the User Name, Password, and Domain information assigned for write access on an Omneon MediaGrid.
10. In the **Clip Directories Configuration** section, specify as follows (see [Figure 20-5](#) for reference):

Clip Directories Configuration:										
Defaults					Default Scene Change Sensitivities Nonlinear scales: 0=off, 1=low, 10=normal, 100+=high		Cuts		Fades	
Configuration										
Ignore	Sync Only	Sync+Proxy	Delete		Directory	Cuts Sensitivity	Fades Sensitivity			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		FCP	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		FCPNRK	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		FCP\record	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		FCP\testESS	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		FmRes	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		NRK	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		Saurav	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		Saurav\bad	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		clip.dir	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		li	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		lNRK	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		lNRK\out	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		lNRK\src	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>		marie	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		richo	<input type="text" value="10"/>	<input type="text" value="10"/>			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		testESS	<input type="text" value="10"/>	<input type="text" value="10"/>			

**Figure 20-5: Clip Directories Configuration Detail**

In the **Defaults** section:

- **Default Scene Change Sensitivity Cuts/Fades:** Enter values for Cut and Fade sensitivity to specify how much scene change must be present in a clip before transition should occur, and how gradual the transition should be. A low Cut value dictates that only major scene changes will prompt a transition. A low Fade value dictates a more rapid transition. The default value for both Cut and Fade is 10.

In the **Configuration** section, on a directory by directory basis, configure as follows:

- **Ignore:** Click to exclude the directory from browse.
  - **Sync Only:** Check to allow polling and callback notification for full database entry. Although proxies are not generated when this setting is checked, you can override this setting on a directory by directory basis using the ProBrowse Desktop.
  - **Sync + Proxy:** Check to allow polling, callback notification, and automatic proxy generation.
  - **Delete:** Check to delete the directory. This option is usually disabled. When an old IP address is discovered for a Host, or when a Director is configured incorrectly, the IP address is displayed in red and the Delete option becomes enabled.
  - **Cuts Sensitivity:** Enter a value to specify how much scene change must be present in a clip before transition should occur.
  - **Fades Sensitivity:** Enter a value to specify how gradual the transition should be from one scene in a clip to the next scene in a clip.
  - **Set All to Ignore (button):** Click to set all directories to Ignore.
  - **Set All to Sync Only (button):** Click to set all directories to Sync Only.
  - **Set All to Sync + Proxy (button):** Click to set all directories to Sync + Proxy.
  - **Set All Cuts to Defaults (button):** Click to set the Cuts Sensitivity for all directories to the default value.
  - **Set All Fades to Defaults (button):** Click to set the Fades Sensitivity for all directories to the default value.
11. Click **Config Detail** to display the **Config Detail** page for an Omneon MediaGrid File System. A sample page is displayed in [Figure 20–6](#).

The screenshot displays the configuration details for a MediaGrid File System named 'testfs'. In the 'General Information' section, the file system name is 'testfs', it is associated with cluster 'cld8', and its DNS name is 'cld8.snv-eng.local'. Under 'Read/Write Proxy Access', the server type is 'ProBrowse Server (Local Storage)', and the NIC1 IP is '10.4.96.20'. The 'MediaGrid' tab is selected, showing the root proxy path as '/cld8/testfs/ProBrowseProxy/proxy200'. In the 'Clip Directories Configuration' section, there are tabs for 'Defaults' and 'Configuration'. The 'Defaults' tab shows 'Default Scene Change Sensitivities' with a scale from 0=off to 100+=high. The 'Configuration' tab lists three entries: '46', '46\1500WM320\_240', and '46\1500WM640\_840', each with 'Cuts' and 'Fades' fields set to 10.

Figure 20–6: Omneon MediaGrid File System Configuration Detail

12. In the **General Information** section, specify as follows:

- **ProBrowse File System Name:** Enter a name for the File System here. File System names are subject to the rules and limitations mentioned in [About Naming Files and System Elements](#).



**NOTE:** A name must be assigned to the File System in order to enable the File System.

- **ProBrowse File System State:** Click to enable or disable the File System. The File System must be enabled for proxy generation to occur.
- **Cluster:** Shows the Omneon MediaGrid cluster for this file system. This field is not user-configurable.
- **File System Name:** Shows a File System for the selected Omneon MediaGrid cluster. This field is not user-configurable.
- **DNS Name:** Enter the DNS name, if any, for the ContentDirector associated with the selected File System. With a DNS name, you can discover clip directories in a File System.



**NOTE:** DNS must be enabled on the Omneon MediaGrid system to make use of this field/feature.

- **Login:** Enter the Username, Password, and Domain assigned to the Omneon MediaGrid.

13. In the **Read/Write Proxy Access** section, select either ProBrowse Server (Local Storage) or Omneon MediaGrid.
  - If you select ProBrowse Server (Local Storage), proceed as follows:
    - Assign Read and Write access to the appropriate NIC, if more than one is present.
  - If you select Omneon MediaGrid, proceed as follows:
    - Enter the root proxy path for read and write access. Enter a DNS name as in the following example: //cl3/fred/browse, or, enter an IP address as in the following example: //10.31.74.103/browseStuff.



**NOTE:** DNS must be enabled on the Omneon MediaGrid system to make use of this field/feature.

- Enter the User Name, Password, and Domain information assigned for write access on an Omneon MediaGrid.

14. In the **Clip Directories Configuration** section, specify as follows (see *Figure 20-7* for reference):

Clip Directories Configuration							
Defaults				Clip Directories Configuration			
				Default Scene Change Sensitivities Nonlinear scales: 0=off, 1=low, 10=normal, 100+=high			
Configuration							
Ignore	Sync Only	Sync+Proxy	Delete	Directory	Cuts Sensitivity	Fades Sensitivity	
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	46	<input type="text" value="10"/>	<input type="text" value="10"/>	
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	46\1500\WM320_240	<input type="text"/>	<input type="text"/>	
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	46\1500\WM640_840	<input type="text"/>	<input type="text"/>	
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	46\HD1500\WM384_216	<input type="text"/>	<input type="text"/>	
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	46\HD1500\WM704_396	<input type="text"/>	<input type="text"/>	
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	46\HD384\WM384_216	<input type="text"/>	<input type="text"/>	
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	xmlFiles	<input type="text"/>	<input type="text"/>	
<input type="button" value="Set All to Ignore"/>		<input type="button" value="Set All to Sync Only"/>		<input type="button" value="Set All to Sync+Proxy"/>		<input type="button" value="Set All Cuts to Defaults"/>	<input type="button" value="Set All Fades to Defaults"/>

**Figure 20-7: Clip Directories Configuration Detail**

In the **Defaults** section:

- **Default Scene Change Sensitivity Cuts/Fades:** Enter values for Cut and Fade sensitivity to specify how much scene change must be present in a clip before transition should occur and how gradual the transition should be. A low Cut value dictates that only major scene changes will prompt a transition. The default value for both Cut and Fade is 10.

In the **Configuration** section, on a directory by directory basis, configure as follows:

- **Ignore:** Click to exclude the directory from browse.
- **Sync Only:** Check to allow polling and callback notification for full database entry. Note that proxies are not generated when this setting is checked.
- **Sync + Proxy:** Check to allow polling, callback notification, and automatic proxy generation.
- **Delete:** Check to delete the directory. This option is usually disabled. When an old IP address is discovered for a directory, or a server is incorrectly configured, the IP address is displayed in red and the **Delete** option becomes enabled.
- **Cuts Sensitivity:** Enter a value to specify how much scene change must be present in a clip before transition should occur.
- **Fades Sensitivity:** Enter a value to specify how gradual the transition should be from one scene in a clip to the next scene in a clip.
- **Set All to Ignore (button):** Click to set all directories to Ignore.

- **Set All to Sync Only (button)**: Click to set all directories to Sync Only.
  - **Set All to Sync + Proxy (button)**: Click to set all directories to Sync + Proxy.
  - **Set All Cuts to Defaults (button)**: Click to set the Cuts Sensitivity for all directories to the default value.
  - **Set All Fades to Defaults (button)**: Click to set the Fades Sensitivity for all directories to the default value.
15. Click **Save File System Config** to save the settings.

This completes the configuration of a ProBrowse Proxy Server.

## Viewing Settings for ProBrowse Proxy Servers

Following are instructions on how to view settings for full resolution Servers such as Spectrum MediaDirectors and Omneon MediaGrid ContentServers with which the ProBrowse Server communicates.

### To view or configure Proxy Server settings:

1. Complete all of the installation procedures for the ProBrowse System detailed in the *Omneon ProBrowse System Installation and User's Guide*.
2. Click the **Configuration Tab** at the top of the SystemManager window, and then click the **Servers** icon in the **ProBrowse** section to access the **Servers** page.
3. Verify that all of the ProBrowse System components (the ProBrowse Servers and ProBrowse Generators) have been discovered and are displayed on the **Servers** page. The status of all components should be "Connected".
4. In the **ProBrowse Servers** section, click the **Config Page** hyperlink to access the **ProBrowse Server Configuration** page for a particular ProBrowse Server.
5. The **ProBrowse Server Configuration** page is divided into two sections; one for Spectrum File Systems proxy configuration and one for Omneon MediaGrid File Systems proxy configuration, if an Omneon MediaGrid is detected on the network. A sample page is displayed in *Figure 20-8*.

Proxy Configuration for Spectrum File Systems							
ProBrowse File System Name	File System Name	GUID	Spectrum		Proxy Access	Config	ProBrowse File System Status
			None	Sync	Proxy	Host	
D2-103_104	fs0	3bc37f49-0404a401	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.50.99	Read: Not set Write: Not set
			<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.51.99	
D2-103_104	fs0	4e4d21ac-041c1404	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.50.133	Read: Not set Write: Not set
			<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.50.134	
D2-103_104	myFS	5fc68304-0b003202	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.50.135	Read: Not set Write: Not set
			<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.50.198	
D2-103_104	FS	af294026-f042e01	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.51.132	Read: Not set Write: Not set
			<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.51.133	
D2-103_104	fs	be852fb7-04057001	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.51.134	Read: Not set Write: Not set
			<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.30.51.98	
D2-103_104	fs	c53a1741-04098801	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.85.104	Read: Not set Write: Not set
			<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.85.105	
D2-103_104	ClipDB	efca0775-05001401	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.85.106	Read: Not set Write: Not set
			<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.107.20	
D2-103_104	fs	be852fb7-04057001	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.107.21	Read: Not set Write: Not set
			<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.107.24	
D2-103_104	fs	c53a1741-04098801	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.107.25	Read: Not set Write: Not set
			<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.66.106	
D2-103_104	fs	be852fb7-04057001	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.66.53	Read: Not set Write: Not set
			<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	10.35.66.105	

Figure 20-8: Proxy Server Configuration

6. Do one of the following:

- To view Spectrum File Systems settings, proceed to [Step 7](#).
  - To view Omneon MediaGrid File Systems settings, proceed to [Step 8](#).
7. **For Spectrum File Systems:** Each row of the table represents a single File System or an extended File System (EFS). Hosts in each EFS are listed in the Spectrum System EFS Hosts column.
- **ProBrowse File System Name:** Shows the assigned filename, if any. Click the Config Detail button to access the **Config Detail** page where you can name or rename the File System, as necessary. File System names are subject to the rules and limitations mentioned in [About Naming Files and System Elements](#).
  - A name must be assigned to the File System in order to enable the File System.
  - **File System Name:** Shows the mountpoint of the File System for the selected Spectrum MediaDirector Host.
  - **GUID:** Shows the 17 character unique ID assigned to the File System.
  - **EFS Host Usage:** Shows the usage assigned to the Spectrum Host(s) in a ProBrowse File System as follows:
    - **None:** Specifies that the Host (port) is only used for metadata writing on a live clip.

- Sync:** Specifies that the Host (port) is used for metadata writing and file scanning activity. Proxy generation will not occur when this choice is checked.
    - Proxy:** Specifies that the Host (port) is used for proxy generation as well as metadata writing, and file scanning activity.
    - Delete:** Click to remove an old IP address associated with a Host. This option is usually disabled. When an old IP address is discovered for a Host, the IP address is displayed in red and the Delete option becomes enabled.
  - **Proxy Access:** Displays the IP address for both Read and Write access points. Click **Config Detail** to access the **Config Detail** page where you specify the repository for the proxy media. Refer to [Configuring ProBrowse Proxy Servers](#) for step by step instructions.
  - **Config:** Click the button to access the **Config Detail** page where you can enable a File System, configure selected parameters, and assign Read/Write proxy access. Refer to [Configuring ProBrowse Proxy Servers](#) for step by step instructions.
  - **ProBrowse File System Status:** Shows the current state of the File System. Click the **Config Detail** button to access the **Config Detail** page where you can enable or disable the File System.
8. **For MediaGrid File Systems:** Each row of the table represents a single File System in a Omneon MediaGrid cluster.
- **ProBrowse File System Name:** Shows the assigned filename, if any. Click the **Config Detail** button to access the **Config Detail** page where you can name or rename the File System, as necessary. File System names are subject to the rules and limitations mentioned in [About Naming Files and System Elements](#).



**NOTE:** A name must be assigned to the File System in order to enable the File System.

---

- **Cluster:** Displays the name of the Omneon MediaGrid cluster to which the File System is associated.
- **File System Name:** Displays the name of the File System in the Omneon MediaGrid cluster.
- **DNS Name:** Displays the assigned DNS name, if any, for the ContentDirector associated with the selected File System. Click the **Config Detail** button to access the **Config Detail** page where you can enter a DNS name, if necessary. With a DNS name, you can discover clip directories in a File System.



**NOTE:** DNS must be enabled on the Omneon MediaGrid system to make use of this field/feature.

---

- **Login:** Displays the Username, Password, and Domain assigned to the Omneon MediaGrid. Click the **Config Detail** button to access the **Config Detail** page where you can enter or changes login information, as necessary.
- **Proxy Access:** Displays the IP address for both Read and Write access points. Click **Config Detail** to access the **Config Detail** page where you specify the repository for the proxy media. Refer to [Configuring ProBrowse Proxy Servers](#) for step by step instructions.
- **Config:** Click to access the **Config Detail** page where you can enable a File System, configure selected parameters, and assign Read/Write proxy access. Refer to [Configuring ProBrowse Proxy Servers](#) for step by step instructions.
- **ProBrowse File System Status:** Shows the current state of the File System. Click the **Config Detail** button to access the **Config Detail** page where you can enable or disable the File System.

## Viewing the Status of ProBrowse Servers

To view various status parameters for a ProBrowse Server:

1. Click the **Configuration Tab** at the top of the SystemManager window, and then click the **Servers** icon in the **ProBrowse** section to access the **Servers List** page.
2. In the **ProBrowse Servers** section, click the **Status Page** hyperlink to access the **ProBrowse Server Status** page for a particular server. A sample page is displayed in *Figure 20–9*.

<b>PROBrowse Server @ 10.4.96.20</b>																																					
status at 2009-03-04 14:49:23																																					
<b>Server Processes</b>																																					
<table border="1"> <tbody> <tr><td><b>Database running</b></td><td>True</td></tr> <tr><td><b>Synchronizer running</b></td><td>True</td></tr> <tr><td><b>ProxyGen BBS running</b></td><td>True</td></tr> <tr><td><b>Watchdog running</b></td><td>True</td></tr> <tr><td><b>Mid-tier version</b></td><td>2.20-b2.4</td></tr> </tbody> </table>		<b>Database running</b>	True	<b>Synchronizer running</b>	True	<b>ProxyGen BBS running</b>	True	<b>Watchdog running</b>	True	<b>Mid-tier version</b>	2.20-b2.4																										
<b>Database running</b>	True																																				
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<b>ProxyGen BBS running</b>	True																																				
<b>Watchdog running</b>	True																																				
<b>Mid-tier version</b>	2.20-b2.4																																				
<b>Database Statistics</b>																																					
<table border="1"> <tbody> <tr><td><b>Clips</b></td><td>1760</td></tr> <tr><td><b>Tracks</b></td><td>4379</td></tr> <tr><td><b>Clip updates on queue</b></td><td>0</td></tr> <tr><td><b>Clips waiting for proxies</b></td><td>1</td></tr> <tr><td><b>Proxies being generated</b></td><td>0</td></tr> <tr><td><b>Proxies failed</b></td><td>26</td></tr> <tr><td><b>Unproxyable clips</b></td><td>0</td></tr> </tbody> </table>		<b>Clips</b>	1760	<b>Tracks</b>	4379	<b>Clip updates on queue</b>	0	<b>Clips waiting for proxies</b>	1	<b>Proxies being generated</b>	0	<b>Proxies failed</b>	26	<b>Unproxyable clips</b>	0																						
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<b>Tracks</b>	4379																																				
<b>Clip updates on queue</b>	0																																				
<b>Clips waiting for proxies</b>	1																																				
<b>Proxies being generated</b>	0																																				
<b>Proxies failed</b>	26																																				
<b>Unproxyable clips</b>	0																																				
<b>Disk Usage</b>																																					
<table border="1"> <tbody> <tr><td><b>Filesystem</b></td><td><b>Size</b></td><td><b>Used</b></td><td><b>Avail</b></td><td><b>Use%</b></td><td><b>Mounted on</b></td></tr> <tr><td>/dev/sda2</td><td>19G</td><td>4.3G</td><td>14G</td><td>24%</td><td>/</td></tr> <tr><td>/dev/sdal</td><td>190M</td><td>18M</td><td>163M</td><td>10%</td><td>/boot</td></tr> <tr><td>tmpfs</td><td>500M</td><td>0</td><td>500M</td><td>0%</td><td>/dev/shm</td></tr> <tr><td>/dev/sda5</td><td>65G</td><td>229M</td><td>62G</td><td>1%</td><td>/var/lib/pgsql/data</td></tr> <tr><td>/dev/sdb1</td><td>4.4T</td><td>1.8T</td><td>2.7T</td><td>40%</td><td>/usr/browseserver</td></tr> </tbody> </table>		<b>Filesystem</b>	<b>Size</b>	<b>Used</b>	<b>Avail</b>	<b>Use%</b>	<b>Mounted on</b>	/dev/sda2	19G	4.3G	14G	24%	/	/dev/sdal	190M	18M	163M	10%	/boot	tmpfs	500M	0	500M	0%	/dev/shm	/dev/sda5	65G	229M	62G	1%	/var/lib/pgsql/data	/dev/sdb1	4.4T	1.8T	2.7T	40%	/usr/browseserver
<b>Filesystem</b>	<b>Size</b>	<b>Used</b>	<b>Avail</b>	<b>Use%</b>	<b>Mounted on</b>																																
/dev/sda2	19G	4.3G	14G	24%	/																																
/dev/sdal	190M	18M	163M	10%	/boot																																
tmpfs	500M	0	500M	0%	/dev/shm																																
/dev/sda5	65G	229M	62G	1%	/var/lib/pgsql/data																																
/dev/sdb1	4.4T	1.8T	2.7T	40%	/usr/browseserver																																
<b>Memory Usage in Megabytes</b>																																					
<table border="1"> <tbody> <tr><td><b>total</b></td><td><b>used</b></td><td><b>free</b></td><td><b>shared</b></td><td><b>buffers</b></td><td><b>cached</b></td></tr> <tr><td>Mem:</td><td>998</td><td>986</td><td>12</td><td>0</td><td>12</td></tr> <tr><td>-/+ buffers/cache:</td><td>931</td><td>67</td><td></td><td></td><td></td></tr> <tr><td>Swap:</td><td>4094</td><td>125</td><td>3968</td><td></td><td></td></tr> </tbody> </table>		<b>total</b>	<b>used</b>	<b>free</b>	<b>shared</b>	<b>buffers</b>	<b>cached</b>	Mem:	998	986	12	0	12	-/+ buffers/cache:	931	67				Swap:	4094	125	3968														
<b>total</b>	<b>used</b>	<b>free</b>	<b>shared</b>	<b>buffers</b>	<b>cached</b>																																
Mem:	998	986	12	0	12																																
-/+ buffers/cache:	931	67																																			
Swap:	4094	125	3968																																		

**Figure 20–9: ProBrowse Server Status**

View the status of a particular ProBrowse Server in the following sections:

In the **Server Processes** section:

- **Database running:** Displays whether the database is running.
- **Synchronizer running:** Displays whether the synchronizer is running
- **ProxyGen BBS running:** Displays whether the ProxyGen BBS is running.
- **Watchdog running:** Displays whether the Watchdog process is running.
- **Mid-tier version:** Displays the current software (firmware version) for the Mid-Tier.

In the **Database Statistics** section:

- **Clips:** Displays the total number of clips in the selected clip database.
- **Tracks:** Displays the total number of tracks associated with the clips in the database,
- **Clip updates on queue:** Shows the number of clips that are queued for update.
- **Clips waiting for proxies:** Displays the number of clips waiting to be proxied.
- **Proxies being generated:** Displays the number of proxies currently being generated.

- **Proxies failed:** Displays the number of clip proxy processes that failed.
- **Unproxyable clips:** Displays the number of clips that could not be proxied.

In the **Disk Usage** section for each File System:

- **Size:** Displays the size of the total disk space available.
- **Used:** Displays the amount of disk space currently occupied.
- **Avail:** Displays the amount of disk space currently available.
- **Use %:** Shows the percentage of disk space currently in use.
- **Mounted on:** Shows the associated mountpoint for the File System.

In the **Memory Usage in Megabytes** section, the following information is available for total memory, buffer cache and swapped memory:

- **Total:** Displays the total memory available.
- **Used:** Displays current memory usage.
- **Free:** Displays the amount of memory currently available.
- **Shared:** Displays the amount of current shared memory.
- **Buffers:** Displays the amount of memory currently buffered.
- **Cached:** Displays the amount of memory currently cached.

## Viewing Properties for ProBrowse Servers

To view properties for ProBrowse Servers:

1. Click the **Configuration Tab** at the top of the SystemManager page, and then click the **Servers** icon in the **ProBrowse** section to access the **Servers** page.
2. In the **ProBrowse Servers** section, click the **Name** hyperlink to access the **ProBrowse Server Properties** page for the selected Server. A sample page is displayed in *Figure 20–10*.

**General Information:**

Name	browsesvr96_20
System Up Time	1 day, 23:02:56.40
Hardware Model	MPP1001S
Serial Number	6DPBQF1
Firmware Version	2.4-20090302

**Interface Information**

Interface	eth0	eth1
IP Address	10.4.96.20	10.4.96.19
MAC Address	00 1C 23 D8 F3 66	00 1C 23 D8 F3 68
MTU	1500	1500

**Interface Statistics**

	eth0 Receive	eth0 Transmit	eth1 Receive	eth1 Transmit
Transfer Rate	0.0 MB/s	0.0 MB/s	0.0 MB/s	0.0 MB/s

**Interface Counters (since agent boot)**

	Octets	Unicast Packets	Non Unicast Packets	Discards	Errors
Octets	1364876800	3290858500	41	0	0
Unicast Packets	79722304	46146128	0	0	0
Non Unicast Packets			0	0	0
Discards			0	0	0
Errors			0	0	0

**Local Disk Storage**

FS(Partition) Name	Total Space (KB)	Used Space (KB)	Available Space (KB)	Used %
/	19840924	4417120	14399664	24
/boot	194442	17892	166511	10
/var/lib/pgsql/data	67763160	234396	64031016	1
/usr/browseserver	2147483647	1845131340	2147483647	40

**Status**

Connected -- Error Alarm  
Wed Mar 4 13:51:57 2009

**CPU Load Average**

0.19, 0.13, 0.10 (over 1, 5, 15 minutes)

**Memory Utilization**

Total Memory: 1022280 KB, Free Memory: 10668 KB (1% free)

**ProBrowse Server Description**

Change Desc

**Last Message**

Wed:13:51:43:

**Wink State**

Off

**Underburn Timecode Mode**

Underburn On  Save Changes

Figure 20–10: ProBrowse Server Properties

3. This page allows you to view select properties for a Server as follows:

In the **General Information** section:

- **Name:** Displays the assigned name for the component.
- **System Up Time:** Displays the time the component has been “up and running” in days, hours, minutes, seconds, and fractions of seconds.
- **Hardware Model:** Displays the Harmonic model number for the component.
- **Serial Number:** Displays the manufacturer’s serial number assigned to the component.
- **Firmware Version:** Displays the version of firmware that resides in the component’s memory.
- **Interface Information**
  - **Interface:** Displays the available interfaces for the unit.
  - **IP Address:** Displays the IP address assigned to each unit’s interface.
  - **MAC Address:** Displays the unique hardware number for each unit’s interface.
  - **MTU:** Shows the maximum size of Ethernet packets. An MTU greater than 1500 bytes indicates that Jumbo Frames are enabled.
- **Interface Statistics:** Shows the receive and transmit rate for each interface

- **Interface Counters:** Shows the raw interface counters since the the SNMP agent was last booted.
- **Local Disk Storage:** Shows the name of each file system (partition), as well as the Total Space, Used Space, Available Space, and percentage of available space used, for each file system.
- **Status:** Displays the current network status for the selected component. This field is used primarily for diagnostic troubleshooting.
- **Status current at:** Displays the most recent date and time that the page was refreshed. Note that the page is automatically refreshed every 30 seconds, unless configured otherwise.
- **CPU Load Average:** Displays the system load averages for the past 1, 5, and 15 minutes on the component.
- **Memory Utilization:** Displays the total real memory, the available real memory, and the percentage of total free memory for the component.
- **ProBrowse Server Description:** Displays a scrollable multi-line description of the component. This field is useful for entering data that clarifies the specific component's role in a ProBrowse System. Click **Change Desc** to enter or revise data.
- **Last Message:** Displays the last message (of any type) associated with the component.
- **Wink State:** Displays the wink state of the component's light bar, either **On** or **Off**.
- **Underburn Timecode Mode**
  - The first drop-down menu allows to turn the Underburn state on or off.
    - When **Underburn On** is selected, all newly generated proxies will have timecode information displayed at the bottom of the clip. Existing proxies which do not already display timecode will display timecode when regenerated.
    - When **Underburn Off** is selected, no newly generated proxies will have timecode information displayed at the bottom of the clip. Existing proxies which display timecode will no longer do so once the proxy is regenerated.



**NOTE:** Alternatively, you can turn the Underburn feature **On** or **Off** using the ProBrowse Desktop. Refer to the *Omneon ProBrowse Installation and User's Guide* for further information.

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- The second drop-down menu allows you to change the mode of the Underburn Timecode.
  - When **Timecode from clip** mode is selected, the timecode in the underburn of the proxy is derived from the source clip. It accurately reflects the frame by frame timecode that is embedded into the video of the source clip.
  - When **Incremental Replacement** mode is selected, the timecode in the underburn of the proxy counts up from a starting point, which is taken from a single value of timecode that is found in the wrapper of the source clip. The "start timecode" value can be set in the source clip using a program such as Final Cut Pro.



**NOTE:** For more information about Underburn Timecode modes, refer to "About Underburn Timecode Modes" in the *Omneon ProBrowse Installation and User's Guide*.

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- **Wink On/Off (button):** Click to change the wink state of the ProBrowse Server.
- **Reboot (button):** Click to reboot the ProBrowse server without removing power from the unit.

- **Shutdown (button):** Click to shut down the ProBrowse server. When the status of the ProBrowse server changes to Not Responding, you can power down the server. Refer to “Powering Down a System” in the *Omneon ProBrowse System Installation and User’s Guide*.

In the **Events** section:

- **Level:** Displays the assigned severity level for an alarm event associated with a component.
- **Time:** Displays the date and time when the alarm event occurred.
- **Event:** Displays the event which triggered the alarm on the component.
- **Clear? (button):** Display when the component has an alarm condition. Resolve the cause of the alarm condition and then click **Clear** to clear the alarm within the component.
- **Delete (button):** Display when the component has an alarm condition. Click to delete the event from the list and clear that event’s Alarm icon.

## Viewing Log Files for ProBrowse Servers

**To view log files:**

1. Click the **Configuration Tab** at the top of the SystemManager window, and then click the **Servers** icon in the **ProBrowse** section to access the **Servers** page.
2. In the **ProBrowse Servers** section, click the **Logs** hyperlink to access the **View Browse Logs** page for a particular Server. A sample page is displayed in *Figure 20–11*.

View ProBrowse Server Logs: browsesvr92\_20

Current time: Tue Jun 3 13:25:33 2008  
Displaying log file:/10.30.92.19/logs/ombrowse/omb\_watchdog.log.  
Showing the most recent 12 lines out of 12.

Watchdog DB Server Browse Synchronizer

Lines are in Reverse order.  
Forward Order

Message
2008-06-03 13:23:53.590880 - starting omb_bst
2008-06-03 13:23:53.219359 - starting omb_dbsvr
2008-06-03 13:23:52.100629 - starting omb_bbb
omb_bst is stopped
omb_dbsvr is stopped
omb_bbb is stopped, and supports omb_bst
postgresql is running, and supports omb_bst omb_dbsvr
2008-06-03 13:23:51.909189 - Watched processes:
2008-06-03 13:23:51.816995 - Omneon ProBrowse watchdog version 2.4a0 starting...
2008-06-03 13:23:16.610572 - Watchdog Exiting.
2008-06-03 13:23:16.600646 - termhandler signaled; terminating.
2008-06-03 04:02:03.163841 - huphandler: closed and reopened log path to /var/log/ombrowse/omb_watchdog.log

End of log.

**Figure 20–11: View ProBrowse Server Logs**

3. This page allows you to view log files and associated properties for the selected Server as follows:
  - **Current Time:** Shows the date and time when the log was last refreshed.

- **Displaying Log File:** Displays the IP address of the Server and location and name of the associated log file.
- **Showing the most recent...:** Shows the most recent lines in the log file.
- **Watchdog:** Click to display the log file for the Watchdog process.
- **DB Server:** Click to display the log file for the database Server.
- **Browse Synchronizer:** Click to display the log file for the Browse Synchronizer.
- **Forward Order/Reverse Order:** Click to display entries in the log files in chronological or reverse chronological order.

## Viewing Properties for ProBrowse Generators

To view properties for ProBrowse Generators:

1. Click the **Configuration Tab** at the top of the SystemManager window, and then click the **Servers** icon in the **ProBrowse** section to access the **Servers** page.
2. In the **ProBrowse Generators** section, click the **Name** hyperlink to access the **Proxy Generator Properties** page for the selected Generator. A sample page is displayed in *Figure 20-12*.

General Information:			
<b>Name</b>	browsegen44_21		
<b>System Up Time</b>	5 days, 20:12:03.64		
<b>Serial Number</b>	CN7170358V0043		
<b>Interface Information</b>	<b>Interface</b>	eth0	
	<b>IP Address</b>	10.30.44.21	
	<b>MAC Address</b>	00 14 22 7B 71 36	
	<b>MTU</b>	1500	
<b>Interface Statistics</b>	<b>Transfer Rate</b>	<b>eth0 Receive</b>	<b>eth0 Transmit</b>
		0.00 MB/s	0.00 MB/s
<b>Interface Counters (since agent boot)</b>	<b>Octets</b>	91936648	155452949
	<b>Unicast Packets</b>	1007933	1208983
	<b>Non Unicast Packets</b>	0	0
	<b>Discards</b>	0	0
	<b>Errors</b>	0	0
<b>Hardware Model</b>	MPB1002G		
<b>Firmware Version</b>	2.3-20080521		
<b>Status</b>	Connected		
<b>Status current at</b>	Tue Jun 3 13:26:54 2008		
<b>CPU Load Average</b>	0.00, 0.00, 0.00 (over 1, 5, 15 minutes)		
<b>Memory Utilization</b>	Total Memory: 2075876 KB, Free Memory: 1235528 KB (59% free)		
<b>ProxyGenerator Description</b>	<input type="text"/> <input type="button" value="Change Desc"/>		
<b>Last Message</b>	Tue:13:24:42:		
<b>Wink State</b>	Off		

**Figure 20-12: ProxyGenerator Properties**

3. This page allows you to view select properties for a Generator as follows:

In the **General Information** section:

- **Name:** Displays the assigned name for the component.

- **System Up Time:** Displays the time the component has been “up and running” in days, hours, minutes, seconds, and fractions of seconds.
- **Serial Number:** Displays the manufacturer’s serial number assigned to the component.
- **(Interface Information) Interface:** Displays the available interfaces for the unit.
- **(Interface Information) IP Address:** Displays the IP address assigned to each unit’s interface.
- **(Interface Information) MAC Address:** Displays the unique hardware number for each unit’s interface.
- **(Interface Information) MTU:** Shows the maximum size of Ethernet packets. An MTU greater than 1500 bytes indicates that Jumbo Frames are enabled.
- **Hardware Model:** Displays the Harmonic model number for the component.
- **Firmware Version:** Displays the version of firmware that resides in the component’s memory.
- **Status:** Displays the current network status for the selected component. This field is used primarily for diagnostic troubleshooting.
- **Status current at:** Displays the most recent date and time that the page was refreshed. Note that the page is automatically refreshed every 30 seconds, unless configured otherwise.
- **CPU Load Average:** Displays the system load averages for the past 1, 5, and 15 minutes on the component.
- **Memory Utilization:** Displays the total real memory, the available real memory, and the percentage of total free memory for the component.
- **ProxyGenerator Description:** Displays a scrollable multi-line description of the component. This field is useful for entering data that clarifies the specific component’s role in a ProBrowse System. Click Change Desc to enter or revise data.
- **Last Message:** Displays the last message (of any type) associated with the component.
- **Wink State:** Displays the wink state of the component’s light bar, either **On** or **Off**.
- **Wink On/Off (button):** Click to change the wink state of the unit.
- **Reboot (button):** Click to reboot the unit without removing the power supply.

In the **Events** section:

- **Level:** Displays the assigned severity level for an alarm event associated with a component.
- **Time:** Displays the date and time when the alarm event occurred.
- **Event:** Displays the event which triggered the alarm on the component.
- **Clear? (button):** Display when the component has an alarm condition. Resolve the cause of the alarm condition and then click **Clear** to clear the alarm within the component.
- **Delete (button):** Display when the component has an alarm condition. Click to delete the event from the list and clear that event’s Alarm icon.

## Viewing Log Files for ProBrowse Generators

**To view log files for ProBrowse Generators:**

1. Click the **Configuration Tab** at the top of the SystemManager window, and then click the **Servers** icon in the **ProBrowse** section to access the **Servers** page.

- In the **ProBrowse Generators** section, click the **Logs** hyperlink to access the **View Browse Logs** page for a particular Generator. A sample page is displayed in *Figure 20–13*.

Current time: Tue Jun 3 13:28:58 2008  
Displaying log file: /10.30.92.21/logs/ombrowse/pgeon/omb\_pgen.log.  
Showing the most recent 392 lines out of 392.

Message
I, [2008-06-03T13:25:02.169315 1248] INFO -- Post an alive message to bulletin board
W, [2008-06-03T13:23:53.111645 1248] WARN -- TranscodeRequest::new -- rinda has become available(10)
I, [2008-06-03T13:23:53.111551 1248] INFO -- ++++++ RindaClient::createProxy -- new connection to server at 'druby://10.30.92.20:1234' for thread #
E, [2008-06-03T13:23:50.110742 1248] ERROR -- TranscodeRequest::new -- failed to open connection to bulletin board {10}
E, [2008-06-03T13:23:35.109369 1248] ERROR -- TranscodeRequest::new -- failed to open connection to bulletin board {5}
E, [2008-06-03T13:23:29.109296 1248] ERROR -- TranscodeRequest::new -- failed to open connection to bulletin board {3}
E, [2008-06-03T13:23:26.109074 1248] ERROR -- TranscodeRequest::new -- failed to open connection to bulletin board {2}
E, [2008-06-03T13:23:23.109079 1248] ERROR -- TranscodeRequest::new -- failed to open connection to bulletin board {1}
E, [2008-06-03T13:23:23.108977 1248] ERROR -- RindaClient::createProxy -- new connection to server at 'druby://10.30.92.20:1234' did not testOK. Discard it
I, [2008-06-03T13:23:20.108892 1248] INFO -- RindaClient::closeProxy -- close rinda connection at 'druby://10.30.92.20:1234' for thread #
I, [2008-06-03T13:05:00.899452 1248] INFO -- Post an alive message to bulletin board
I, [2008-06-03T12:44:59.579599 1248] INFO -- Post an alive message to bulletin board
I, [2008-06-03T12:24:58.258727 1248] INFO -- Post an alive message to bulletin board
I, [2008-06-03T12:04:56.946816 1248] INFO -- Post an alive message to bulletin board

**Figure 20–13: ProBrowse Generators—View Browse Logs**

- This page allows you to view log files and associated properties for the selected Generator as follows:
  - Current Time:** Shows the date and time when the log was last refreshed.
  - Displaying Log File:** Displays the IP address of the Generator and location and name of the associated log file.
  - Showing the most recent...:** Shows the most recent lines in the log file.
  - ProBrowse Generator:** Click to redisplay the log file for the selected ProBrowse Generator.
  - Forward Order/Reverse Order:** Click to display entries in the log files in chronological or reverse chronological order.

## Performing Management and Troubleshooting on ProBrowse Systems

With this release of the SystemManager application, you can perform system management, troubleshooting, and monitoring tasks as follows:

- Use the Dell™ OpenManage™ utility (installed with SystemManager Release 5.0 and later) for RAID and Disk maintenance on ProBrowse Systems. See the procedure that follows for additional information.
- Use the SystemManager alarm function to get notification when environmental parameters, such as temperature or fan speeds on ProBrowse Servers and Generators reach threshold levels. Refer to the Release Notes which accompany this product release for additional information.

### To access Dell OpenManage:

- Click the **Configuration Tab** at the top of the SystemManager page, and then click the **Servers** icon in the **ProBrowse** section to access the **Servers** page.

2. In the **ProBrowse Server** section, click the **System Management** hyperlink to access the Dell OpenManage Log in page. A sample page is displayed in *Figure 20–14*.



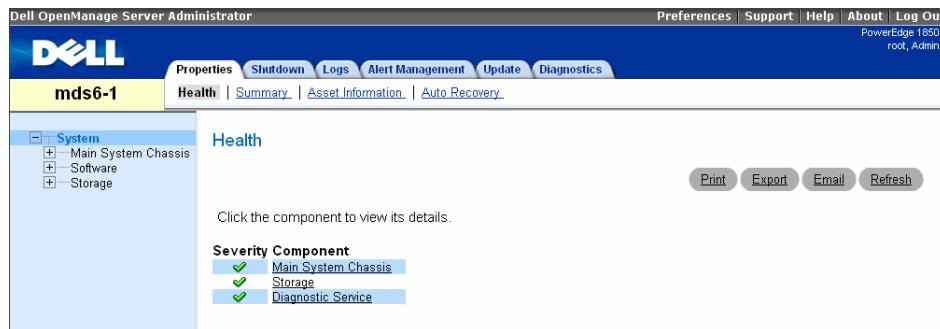
**Figure 20–14: OpenManage Log in**



**NOTE:** On the NSM-2007/K SystemManager Platform, a warning dialog appears when attempting to access the Dell™ OpenManage™ interface for Omneon MediaGrid via the System Management links. Ignore the warning and proceed to the OpenManage GUI by clicking Continue.

3. Log in with the user name and default password for the root account.

The Dell OpenManage window appears as shown in *Figure 20–15*.



**Figure 20–15: OpenManage Window**

4. On the left hand navigation column (blue), navigate to the RAID Controller at:  
System > Storage > PERC 4e/Di (Embedded) > Connector 0 (RAID) > Backplane > Physical Disks  
and/or:  
System > Storage > PERC 4e/Di (Embedded) > Connector 1 (RAID) > Virtual Disks
5. Click the **Help** tab at the top of each page to view information about the page and execute disk related tasks.

## Upgrading ProBrowse System Firmware



**IMPORTANT:** When upgrading from all versions prior to 2.4, you must follow the upgrade instructions provided in the ProBrowse 2.4 Release Notes. Once you have upgraded to version 2.4, for all subsequent upgrades, use the upgrade instructions provided in this section.

**To select a new ProBrowse System firmware version and install it on one or more ProBrowse Servers:**

1. From the **Home** tab, click the **Options** icon to display the **Options** page.
2. Click the **Firmware Selection** icon in the left-hand column to display the **Firmware Version Selection** page. A sample page is displayed in *Figure 20–16*.

The screenshot shows a table with four columns: MediaDeck/Spectrum, ProXchange, ProBrowse, and Omneon MediaGrid. Each column contains a list of firmware versions with radio buttons for selection. A red checkmark is present next to the selected version in each row.

MediaDeck/Spectrum	ProXchange	ProBrowse	Omneon MediaGrid
<input type="checkbox"/> omneon.nightly <input type="radio"/> 2011.01.24 <input type="radio"/> 2011.01.18 <input checked="" type="radio"/> 2010.12.07 ✓	<input type="checkbox"/> proxchange.release-1.4 <input type="radio"/> 2009.03.24.22.00 <input type="radio"/> 2009.03.05.22.00 <input type="checkbox"/> proxchange.release-1.3 <input type="radio"/> 2008.10.21.15.04 <input type="radio"/> 2008.10.20.10.03 <input type="radio"/> 2008.10.17.11.34 <input type="radio"/> 2008.10.16 <input type="radio"/> 2008.10.13 <input type="radio"/> 2008.10.10 <input type="radio"/> 2008.10.08.11.00 <input type="radio"/> 2008.10.06.11.02 <input checked="" type="radio"/> 2008.10.01.17.33 ✓		<input type="checkbox"/> mediagrid.release-3.0 <input checked="" type="radio"/> 2011.04.12 ✓ <input type="radio"/> 2011.04.11 <input type="radio"/> 2011.04.08 <input type="radio"/> 2011.04.05 <input type="radio"/> 2011.04.01 <input type="radio"/> 2011.03.31 <input type="radio"/> 2011.03.30 <input type="radio"/> 2011.03.29 <input type="radio"/> 2011.03.25 <input type="radio"/> 2011.03.23 <input type="radio"/> 2011.03.22.16.14 <input type="radio"/> 2011.03.21.11.34

**Figure 20–16: Firmware Version Selection**

3. In the **ProBrowse** column, click the radio button for the desired firmware version. The red check mark indicates the selected version.
4. When the confirmation dialog appears, click **OK** to accept.
5. Click the **Upgrade Firmware** icon in the left-hand column to display the **Upgrade Firmware** page. A sample page is displayed in *Figure 20–17*.

The screenshot shows two sections: **ProBrowse Servers** and **ProBrowse Generators**. Each section has a note about rebooting after upgrading. Below each note is a table with columns: Name, IP Address, Status, Current Software Version, and Select (checkbox). At the bottom of each section are buttons for **Upgrade ProBrowse Servers** and **Reboot ProBrowse Servers**, along with **Select all** and **Clear** buttons.

ProBrowse				
Currently selected upgrade version: probrowse.nightly-2.3/2008.12.12 (To select a firmware version for upgrade click the Firmware Selection Icon.)				
<b>ProBrowse Servers</b> (Note: ProBrowse Servers must be rebooted after upgrading.)				
Name	IP Address	Status	Current Software Version	Select
browsesvr105_20	10.4.105.20	Connected	2.3-20080511	<input type="checkbox"/>
browsesvr96_20	10.4.96.20	Connected -- Error Alarm	2.3-20081212	<input type="checkbox"/>
browsesvr104_20	10.4.104.20	Connected	2.3-20080924	<input type="checkbox"/>
<b>Upgrade ProBrowse Servers</b> <b>Reboot ProBrowse Servers</b> <b>Select all</b> <b>Clear</b>				
<b>ProBrowse Generators</b> (Note: ProBrowse Generators must be rebooted after upgrading.)				
Name	IP Address	Status	Current Software Version	Select
browsegen105_21	10.4.105.21	Connected	2.3-20080511	<input type="checkbox"/>
browsegen104_21	10.4.104.21	Connected	2.3-20080924	<input type="checkbox"/>
browsegen96_21	10.4.96.21	Not responding	2.3-20081212	<input type="checkbox"/>
browsegen96_23	10.4.96.23	Connected	2.3-20081212	<input type="checkbox"/>
browsegen96_22	10.4.96.22	Connected -- Error Alarm	2.3-20081212	<input type="checkbox"/>
browsegen104_22	10.4.104.22	Connected	2.3-20080924	<input type="checkbox"/>
<b>Upgrade ProBrowse Generators</b> <b>Reboot ProBrowse Generators</b> <b>Select all</b> <b>Clear</b>				

**Figure 20–17: Upgrade Firmware**

6. Scroll to the **ProBrowse Servers** section and click in the **Select** column to specify one or more **ProBrowse Servers** for upgrading.
7. Click **Upgrade ProBrowse Servers** to upgrade the firmware of each selected **ProBrowse Server**.

8. Select the ProBrowse Servers that were upgraded and click **Reboot ProBrowse Servers** to reboot those servers.
9. Once the firmware upgrade is complete, return to the **ProBrowse Server** section of the **Upgrade Firmware** page to verify the version number for each **ProBrowse Server**.
10. In the ProBrowse Generators section, click in the **Select** column to specify the ProBrowse Generators you wish to upgrade.
11. Click **Upgrade ProBrowse Generators** to upgrade the firmware of each selected ProBrowse Generator.
12. Select the ProBrowse Generators that were upgraded and click **Reboot ProBrowse Generators** to reboot those ProBrowse Generators.
13. Once the firmware upgrade is complete, return to the **ProBrowse Generators** section of the **Upgrade Firmware** page to verify the version number for each **ProBrowse Generator**.

This completes the firmware upgrade process for a ProBrowse System.

## Part V: ProXchange

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# Chapter 21

## ProXchange Configuration

This chapter provides procedures for configuring, operating, and managing ProXchange using the SystemManager application. Choose from the following topics:

- [Viewing ProXchange JobDirectors and JobScalers in a System](#)
- [Viewing JobDirector Properties](#)
- [Viewing the Status of JobDirectors](#)
- [Viewing the Status of ProXchange Jobs](#)
- [Viewing ProXchange JobDirector Logs](#)
- [Viewing JobScaler Properties](#)
- [Viewing ProXchange JobScaler Logs](#)
- [Performing Management and Troubleshooting on ProXchange Systems](#)
- [Upgrading ProXchange System Firmware](#)



**NOTE:** Refer to the *Omneon ProXchange Installation and User's Guide* for detailed instructions on installing a ProXchange System.

### Viewing ProXchange JobDirectors and JobScalers in a System

To view ProXchange JobDirectors and JobScalers:

1. Click the **Configuration Tab** at the top of the SystemManager page, and then click the **Servers** icon in the **ProXchange** section to display the **ProXchange** page as shown in [Figure 21–1](#).

The screenshot shows the SystemManager interface with the 'Servers' tab selected. Under the 'ProXchange' section, there are two tables:

**ProXchange JobDirector**

Name	IP Address	IP Address 2	Network Status	System Up Time	Status Page	View Logs	Services	System Management	Job Status	Wink Status	Select	
xcodesvr8_147	10.30.8.146	10.30.8.147	Connected	36 days, 18:28:59.41	<a href="#">Status</a>	<a href="#">Logs</a>	<a href="#">Start</a>	<a href="#">Stop</a>	<a href="#">System Management</a>	<a href="#">Job Status</a>	Off	<input type="checkbox"/>
xcodesvr70_240	10.30.70.240	10.30.71.240	Connected	29 days, 4:36:32.14	<a href="#">Status</a>	<a href="#">Logs</a>	<a href="#">Start</a>	<a href="#">Stop</a>	<a href="#">System Management</a>	<a href="#">Job Status</a>	Off	<input type="checkbox"/>
xcodesvr8_160	10.30.8.160		Connected -- Warning Alarm	20:55:22.41	<a href="#">Status</a>	<a href="#">Logs</a>	<a href="#">Start</a>	<a href="#">Stop</a>	<a href="#">System Management</a>	<a href="#">Job Status</a>	Off	<input type="checkbox"/>
xcodesvr44_100	10.30.44.100	10.30.44.92	Connected	11 days, 14:34:36.52	<a href="#">Status</a>	<a href="#">Logs</a>	<a href="#">Start</a>	<a href="#">Stop</a>	<a href="#">System Management</a>	<a href="#">Job Status</a>	Off	<input type="checkbox"/>

**ProXchange JobScaler**

Name	IP Address	IP Address 2	Network Status	System Up Time	View Logs	Services	System Management	Wink Status	Select	
xcodesvr70_241	10.30.70.241	10.30.71.241	Connected	14 days, 4:22:19.69	<a href="#">Logs</a>	<a href="#">Start</a>	<a href="#">Stop</a>	<a href="#">System Management</a>	Off	<input type="checkbox"/>

At the bottom of each table are buttons for 'Wink On', 'Wink Off', 'Select all', and 'Clear'.

Refresh Interval for this page is 30 seconds.

Figure 21–1: ProXchange—Servers

You can view the following information in the **ProXchange JobDirector** section:

- **Name:** Displays the name of the JobDirector. Click the hyperlink to access the **JobDirector's Properties** page.
- **IP Address:** Displays the Server's IP address.
- **IP Address 2:** Displays a secondary IP address for the Server.
- **Network Status:** Displays the JobDirector's current network status, authentication status and security access level, including "Connected," "Not Responding," "Error," "Deleted," "Starting Upgrade," "Authenticated," "Not Authenticated," "Administrator."
- **System Up Time:** Displays the time the JobDirector has been "up and running" in days, hours, minutes, seconds and fractions of seconds.
- **Status Page (hyperlink):** Click this link to access the ProXchange JobDirector status page, which shows several server properties. The status page may not launch properly if the JobDirector is not in the Connected state. Instead, you will see the message "No page found." When not in the Connected state, the JobDirector may not attain the connected state because it is unresponsive on the network, or software components are not working properly. Refer to [Viewing the Status of JobDirectors](#).
- **View Logs (hyperlink):** Click to view the log files and associated properties for the JobDirector. Refer to [Viewing ProXchange JobDirector Logs](#).
- **Services (Start/Stop buttons):** Click to start or stop the JobDirector's services.



**NOTE:** The **Start Services** action starts the appropriate services. If some or all services are already running, and a transcode is in progress, that transcode will be stopped and later restarted. The Start button should not be used unless there is an issue with the current state of the services. Note that the **Status** link can be used to examine the current state of the services for ProBrowse and/or ProXchange. In addition, **Job Status** can show more detailed status of ProXchange work in progress.

---

- **System Management (hyperlink):** Click this link to access the Dell OpenManage log in page. Once logged in, you can view information about your system. Refer to [Performing Management and Troubleshooting on ProXchange Systems](#) for additional information and an important note for first time users of the System Management link.
- **Job Status:** shows the status of ProXchange jobs. For more information, refer to [Viewing the Status of ProXchange Jobs](#).
- **Wink Status:** shows whether the Wink function is enabled on the JobDirector. When Wink is On, front and back panel LEDs flash to identify a JobDirector. Click the Wink buttons at the bottom of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select a JobDirector.
- **Wink on (button):** Click to change the wink status of all the selected units to On.
- **Wink off (button):** Click to change the wink status of all the selected units to Off.
- **Select all (button):** Click to select all the JobDirectors.
- **Clear (button):** Click to deselect all JobDirectors.

You can view the following information in the **ProXchange JobScaler** section:

- **Name:** the name of the JobScaler. Click the hyperlink to access the JobScaler's **Properties** page. Refer to [Viewing JobScaler Properties for additional information](#).
- **IP Address:** Displays the Server's IP address.

- **IP Address 2:** Displays a secondary IP address for the Server.
- **Network Status:** Displays the JobScaler's current network status, authentication status and security access level, including "Connected," "Not Responding," "Error," "Deleted," "Starting Upgrade," "Authenticated," "Not Authenticated," "Administrator."
- **System Up Time:** the time the JobScaler has been "up and running" in days, hours, minutes, seconds and fractions of seconds.
- **View Logs (hyperlink):** Click to view the log files and associated properties for the JobScaler. Refer to [Viewing ProXchange JobScaler Logs](#) for additional information.
- **Services (Start/Stop buttons):** Click to start or stop the JobScaler's services.
- **Wink Status:** shows whether the Wink function is enabled on the JobScaler. When Wink is On, front and back panel LEDs flash to identify a JobScaler. Click the Wink buttons at the bottom of the section to turn Wink **On/Off**.
- **Select:** Click the **Select** check box to select a JobScaler.
- **Wink on (button):** Click to change the wink status of all the selected units to On.
- **Wink off (button):** Click to change the wink status of all the selected units to Off.
- **Select all (button):** Click to select all the JobScalers.
- **Clear (button):** Click to deselect all JobScalers.

## Viewing JobDirector Properties

Follow these steps to view JobDirector Properties:

1. Click the **ProXchange Servers** icon on the Configuration tab to access the **ProXchange** page.
2. In the **ProXchange JobDirector** section, click the **Name** hyperlink for the required unit to access the **Properties** page ([Figure 21-2](#)).

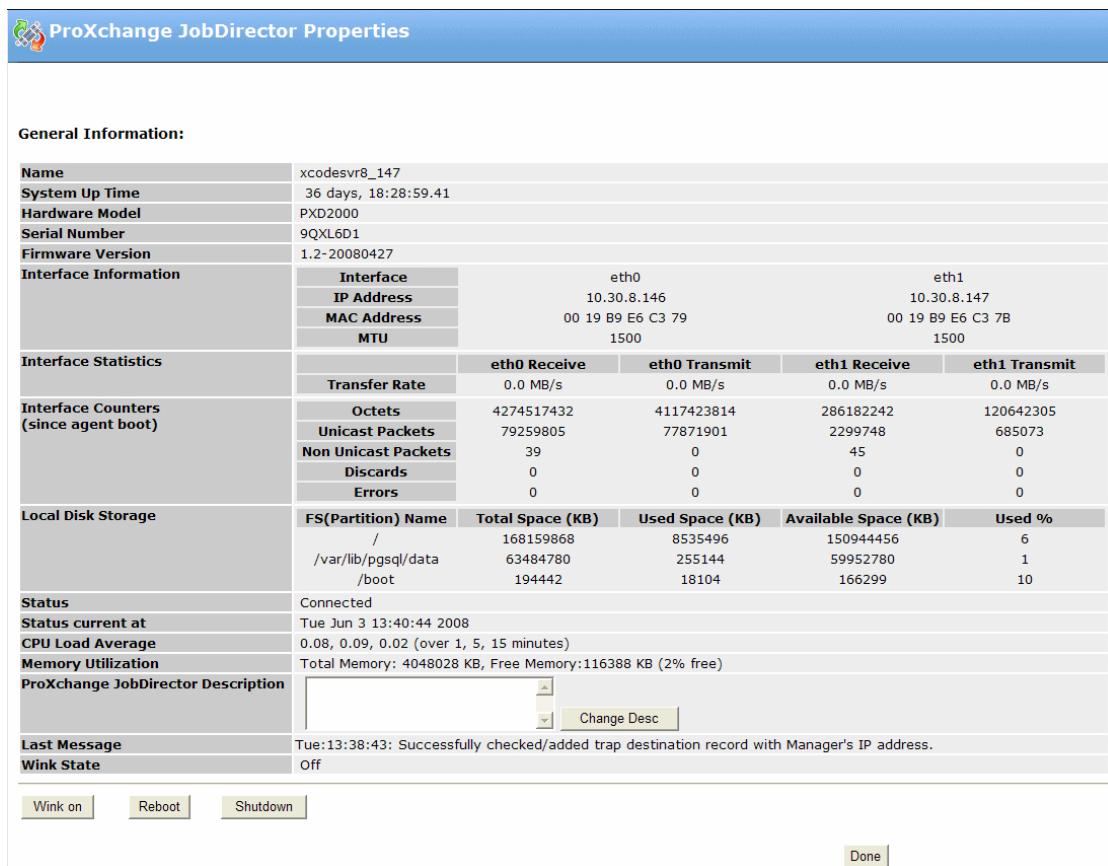


Figure 21–2: ProXchange JobDirector Properties—General Information

The following properties are displayed in the **General Information** section:

- **Name:** the assigned name of the JobDirector. This name is automatically generated during installation.
- **System Up Time:** the time the JobDirector has been “up and running” in days, hours, minutes, seconds and fractions of seconds.
- **Hardware Model:** the Harmonic model number for the JobDirector.
- **Serial Number:** the manufacturer’s serial number assigned to the JobDirector.
- **Interface Information:**
  - **Interface:** the name of the JobDirector’s connected NIC(s).
  - **IP Address:** the IP address assigned to the JobDirector interface(s).
  - **MAC Address:** the unique hardware number for the JobDirector interface(s).
  - **MTU:** the maximum size of Ethernet packets.
- **Firmware Version:** the version of firmware that resides in the JobDirector’s memory.
- **Status:** the current network status of the JobDirector. This field is used primarily for diagnostic troubleshooting.
- **Status current at:** the most recent date and time that the page was refreshed. Note that this page is automatically refreshed every 10 seconds.

- **CPU Load Average:** the system load averages for the past 1, 5 and 15 minutes on the JobDirector.
- **Memory Utilization:** the total real memory, the available real memory, and the percentage of total free memory for the JobDirector.
- **ProXchange JobDirector Description:** a scrollable multi-line description of the JobDirector. This field is useful for entering data specific details about this JobDirector.
- **Last Message:** the last message (of any type) associated with the JobDirector.
- **Wink State:** the wink state of the JobDirector's light bar, either **On** or **Off**.
- **Wink on (button):** Click to change the wink state.
- **Reboot (button):** Click to reboot the JobDirector without removing the power supply.
- **Shutdown (button):** Click to shut down the JobDirector. When the **Status** field changes to **Not Responding**, you can power down the JobDirector.

#### Events

You may clear the listed alarms by clicking this button:

You may delete the listed alarms by clicking this button:

Level	Time	Event	Info	Clear?	Delete
WARN	Mon Jun 2 16:44:20 2008	Device reboot	SNMP agent rebooted	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>
WARN	Mon Jun 2 16:42:20 2008	Device reboot	Device rebooted	<input type="button" value="Clear"/>	<input type="button" value="Delete"/>

Refresh Interval for this page is 30 seconds.

**Figure 21–3: General Information—Events Section**

The **Events** section (*Figure 21–3*) displays the following information when an alarm event occurs:

- **Clear All (button):** Click to clear all of the alarms in the list.
- **Delete All (button):** Click to delete all of the alarms in the list.
- **Level:** the assigned severity level for an alarm event associated with a unit.
- **Time:** the date and time when the alarm event occurred.
- **Event:** the event that triggered the alarm on the unit.
- **Info:** information about the event.
- **Clear? (button):** Displays when the unit has an alarm condition. Resolve the cause of the alarm condition and then click **Clear** to clear the alarm within the unit.
- **Delete (button):** Displays when the unit has an alarm condition. Click to delete the event from the list and clear that event's Alarm icon.



**NOTE:** You can also access the events for a System(s) by clicking **View Alarms** from the Diagnostic tab.

## Viewing the Status of JobDirectors

Follow these steps to view JobDirector Status:

1. Click the **Configuration** tab at the top of the SystemManager page, and then click the **ProXchange Servers** icon to access the **ProXchange** page.

- In the ProXchange JobDirector section, click the **Status Page** hyperlink to access the ProXchange JobDirector Status page for a particular JobDirector. A sample page follows.

PROXchange Director @ 10.4.32.20																															
status at 2008-11-20 09:44:41																															
<b>Server Processes</b>																															
<table border="1"> <tr><td>Database running</td><td>True</td></tr> <tr><td>Synchronizer running</td><td>True</td></tr> <tr><td>Transcode BBS running</td><td>True</td></tr> <tr><td>Watchdog running</td><td>True</td></tr> <tr><td>Mid-tier version</td><td>2.18</td></tr> <tr><td>Grid client running</td><td>True</td></tr> <tr><td>Transcode running</td><td>True</td></tr> </table>		Database running	True	Synchronizer running	True	Transcode BBS running	True	Watchdog running	True	Mid-tier version	2.18	Grid client running	True	Transcode running	True																
Database running	True																														
Synchronizer running	True																														
Transcode BBS running	True																														
Watchdog running	True																														
Mid-tier version	2.18																														
Grid client running	True																														
Transcode running	True																														
<b>License information</b>																															
<table border="1"> <tr><td>Number of content servers licensed to run ProXchange</td><td>48</td></tr> </table>		Number of content servers licensed to run ProXchange	48																												
Number of content servers licensed to run ProXchange	48																														
<b>Grid mds8.snv-eng.local Information</b>																															
<table border="1"> <tr><td>mds8.snv-eng.local transcoders</td><td>6</td></tr> <tr><td>mds8.snv-eng.local state</td><td>1</td></tr> <tr><td>mds8.snv-eng.local status</td><td>Grid 48 allocated on mds8.snv-eng.local</td></tr> </table>		mds8.snv-eng.local transcoders	6	mds8.snv-eng.local state	1	mds8.snv-eng.local status	Grid 48 allocated on mds8.snv-eng.local																								
mds8.snv-eng.local transcoders	6																														
mds8.snv-eng.local state	1																														
mds8.snv-eng.local status	Grid 48 allocated on mds8.snv-eng.local																														
<b>No ProXchange scalers listed in database</b>																															
<b>Disk Usage</b>																															
<table border="1"> <tr><td>Filesystem</td><td>Size</td><td>Used</td><td>Avail</td><td>Use%</td><td>Mounted on</td></tr> <tr><td>/dev/sda3</td><td>80G</td><td>4.3G</td><td>71G</td><td>6%</td><td>/</td></tr> <tr><td>/dev/sda5</td><td>61G</td><td>269M</td><td>58G</td><td>1%</td><td>/var/lib/pgsql/data</td></tr> <tr><td>/dev/sda1</td><td>190M</td><td>18M</td><td>163M</td><td>10%</td><td>/boot</td></tr> <tr><td>tmpfs</td><td>2.0G</td><td>0</td><td>2.0G</td><td>0%</td><td>/dev/shm</td></tr> </table>		Filesystem	Size	Used	Avail	Use%	Mounted on	/dev/sda3	80G	4.3G	71G	6%	/	/dev/sda5	61G	269M	58G	1%	/var/lib/pgsql/data	/dev/sda1	190M	18M	163M	10%	/boot	tmpfs	2.0G	0	2.0G	0%	/dev/shm
Filesystem	Size	Used	Avail	Use%	Mounted on																										
/dev/sda3	80G	4.3G	71G	6%	/																										
/dev/sda5	61G	269M	58G	1%	/var/lib/pgsql/data																										
/dev/sda1	190M	18M	163M	10%	/boot																										
tmpfs	2.0G	0	2.0G	0%	/dev/shm																										
<b>Memory Usage in Megabytes</b>																															
<table border="1"> <tr><td>total</td><td>used</td><td>free</td><td>shared</td><td>buffers</td><td>cached</td></tr> <tr><td>Mem:</td><td>3948</td><td>2132</td><td>1816</td><td>0</td><td>247</td></tr> <tr><td>-/+ buffers/cache:</td><td>1408</td><td>2540</td><td></td><td></td><td></td></tr> <tr><td>Swap:</td><td>4094</td><td>0</td><td>4094</td><td></td><td></td></tr> </table>		total	used	free	shared	buffers	cached	Mem:	3948	2132	1816	0	247	-/+ buffers/cache:	1408	2540				Swap:	4094	0	4094								
total	used	free	shared	buffers	cached																										
Mem:	3948	2132	1816	0	247																										
-/+ buffers/cache:	1408	2540																													
Swap:	4094	0	4094																												

Figure 21–4: ProXchange JobDirector Status

View the status of a particular JobDirector ([Figure 21–4](#)) in the following sections:

### Server Processes

- Database running:** Indicates whether the database is running or not.
- Synchronizer running:** Displays whether the synchronizer software is running or not. The synchronizer watches for new tasks created by ProXchange Manager and then posts jobs on the transcode bulletin board.
- Transcode BBS running:** Displays whether the transcode Bulletin Board System is running or not. Tasks are placed on the bulletin board and then transcoded by the Omneon MediaGrid ContentServers.
- Watchdog running:** Displays whether the watchdog process is running or not. The watchdog timer resets the system in the event a system hang. Refer to [Viewing ProXchange JobScaler Logs](#) for more information.
- Mid-tier version:** Displays the current software (firmware version) for the mid tier.
- Grid client running:** Displays whether the grid client is running or not. The grid client manages the resources (ContentServers) on Omneon MediaGrid and monitors posts from the synchronizer.

- **Transcode running:** Displays whether the transcode engine is running or not. This service transcodes video and/or audio essence, directing the output to a buffer on the originating application server for assembly and wrapping.

#### License Information

- **Number of ContentServers licensed to run ProXchange:** Displays the number of ContentServers that can be used to complete transcode jobs.

#### Grid <DNS Name> of Omneon MediaGrid

- **Transcoders:** Displays the number of ContentServers on the Omneon MediaGrid that are running the ProXchange application.
- **State:** A state of “1” indicates that use of the Omneon MediaGrid’s ContentServers is initialized; “0” indicates that use is not initialized.
- **Status:** Shows the current status of “grid” application use. The Grid represents the subset of ContentServers in a cluster that are available for transcoding.
- **Grid allocated on <name of Omneon MediaGrid>:** Indicates that use of the number of requested ContentServers is allowed.
- **Grid not allocated on <name of Omneon MediaGrid>:** Indicates that use of the number of requested ContentServers is not granted.

#### Disk Usage (for each file system)

- Size:** the size of the total disk space available.
- Used:** the amount of disk space currently occupied.
- Avail:** the amount of disk space currently available.
- Use%:** the percentage of disk space currently in use.
- Mounted on:** the associated mountpoint for the file system.

#### Memory Usage in Megabytes

In this section, the following information is available for total memory, buffer cache and swapped memory:

- **Total:** the total memory available.
- **Used:** the current memory usage.
- **Free:** the amount of memory currently available.
- **Shared:** the amount of current shared memory.
- **Buffers:** the amount of memory currently buffered.
- **Cached:** the amount of memory currently cached.

## Viewing the Status of ProXchange Jobs

To view the status of and results of ProXchange jobs:

1. Click the **Configuration** tab at the top of the SystemManager page, and then click the **ProXchange Servers** icon to access the **ProXchange** page.
2. In the **ProXchange JobDirector** section, click the **Job Status** hyperlink to access the **ProXchange Job Status** page for a particular JobDirector. A sample page follows.

The screenshot shows the PROXchange Job Director interface. At the top, it displays "JobDirector 10.30.56.20" and "Job Status at 2007-08-27 15:43:11". Below this is a navigation bar with dropdown menus for "View All Jobs" and "Posted / Started Any Time", and buttons for "Page Size 100", "Page 1 / 1", "prev next", "Refresh Every Minute", and "Refresh Now". The main area is a table titled "Source Clip Name" listing various video files and their processing status. The columns are: Source Clip Name, Job Description, State, Progress, Posted / Started, Completed, and Status Info. The table contains 12 rows of data. At the bottom of the table, there is a summary panel with job details: Job #: 2365, Setting: MPEGL 8, Description: MPEGL 8, Server: 10.30.56.20, Source: DV50, 1V1A, VBI, PCM(4), Retries: 0, Source Path: //10.30.60.200/xcodefs1/ftmp/DVCPR050-1M-1.mov, and Output Path: //10.30.60.200/xcodefs1/FDResultTest/DVCPR050-1M-1-mpeg2-8000.mxf.

Source Clip Name	Job Description	State	Progress	Posted / Started	Completed	Status Info
FCP5_1080i50_DVCPR0HD.mov	HD LGOP 19	Complete (10)	<div style="width: 100%;">100%</div>	2007-08-24 11:00:31	2007-08-24 11:27:34	100% complete (0.92x realtime rate)
FCP5_1080i50_DVCPR0HD.mov	HD LGOP 19	Superseded (-99)	<div style="width: 63%;">63%</div>	2007-08-24 10:42:28		Job 2367 aborted 'Signal 11'
4.6SR2-SD-quicktime6-mpeg30I-imx-2-2-wav-16-1800.mov	MPEGL 8	Complete (10)	<div style="width: 100%;">100%</div>	2007-08-24 10:12:19	2007-08-24 10:12:43	100% complete (2.5x realtime rate)
DVCPR050-1M-1.mov	MPEGL 8	Complete (10)	<div style="width: 100%;">100%</div>	2007-08-24 10:11:51	2007-08-24 10:12:15	100% complete (2.5x realtime rate)
1080ipal_300.mov	HD LGOP 19	Complete (10)	<div style="width: 100%;">100%</div>	2007-08-23 18:18:57	2007-08-23 18:19:09	100% complete (1.01x realtime rate)
sh1hd_1200.mov	HD LGOP 19	Complete (10)	<div style="width: 100%;">100%</div>	2007-08-23 18:18:03	2007-08-23 18:18:55	100% complete (0.77x realtime rate)
sh1hd.mov	HD LGOP 19	Complete (10)	<div style="width: 100%;">100%</div>	2007-08-23 18:16:10	2007-08-23 18:18:00	100% complete (0.92x realtime rate)
4.6SR2_1080i50_422-HD-qt6-mpeg50L-8-2-aiff-16-33000.mov	HD LGOP 19	Complete (10)	<div style="width: 100%;">100%</div>	2007-08-23 17:57:27	2007-08-23 18:16:06	100% complete (1.18x realtime rate)
sh1hd_600.mov	HD LGOP 19	Complete (10)	<div style="width: 100%;">100%</div>	2007-08-23 17:57:01	2007-08-23 17:57:25	100% complete (0.84x realtime rate)
1sec-720p50.mov	HD LGOP 19	Complete (10)	<div style="width: 100%;">100%</div>	2007-08-23 16:58:33	2007-08-23 16:58:36	100% complete (0.33x realtime rate)
FCP5s-720p50-8-aiff24.mov	HD LGOP 19	Complete (10)	<div style="width: 100%;">100%</div>	2007-08-23 16:57:50	2007-08-23 16:58:30	100% complete (0.89x realtime rate)
4.6SR2-SD-quicktime6-mpeg30I-imx-2-2-wav-16-1800.mov	MPEGL 8	Superseded (-99)	<div style="width: 100%;">100%</div>	2007-08-23 07:48:49	2007-08-23 07:49:14	100% complete
DVCPR050-1M-1.mov	MPEGL 8	Superseded (-99)	<div style="width: 100%;">100%</div>	2007-08-23 07:48:23	2007-08-23 07:48:47	100% complete

Job #: 2365 Setting: MPEGL 8 Description: MPEGL 8 Server: 10.30.56.20 Source: DV50, 1V1A, VBI, PCM(4) Retries: 0  
Source Path: //10.30.60.200/xcodefs1/ftmp/DVCPR050-1M-1.mov  
Output Path: //10.30.60.200/xcodefs1/FDResultTest/DVCPR050-1M-1-mpeg2-8000.mxf

**Figure 21–5: ProXchange Job Status**

The following information is available on a per clip basis:

- **Source Clip Name:** shows the source clip
- **Job Description:** shows the job description, entered using ProXchange Manager
- **State:** shows the state of the transcode process, including Complete, Posted and In progress
- **Progress:** shows the clip's transcode progress
- **Posted/Started:** shows when the clip was posted; when the transcode job started
- **Completed:** shows when the transcode process completed
- **Status Info:** shows status information

Click any clip in the **Source Clip Name** column to view more detailed information about the clip. Details are shown in the page's lower panel. By default, jobs are listed by starting time, with the newest shown first. Columns can be sorted in ascending or descending order by clicking the column heading.

## Adjusting Job Status Fields

You can adjust the information displayed on the by choosing the different options from the menus at the top of the page, including:

- **View:** Select from All Jobs, Completed Jobs, Failed Jobs, Posted Jobs, Active Jobs, Jobs in Progress, Errors.
- **Posted/Started:** View jobs posted or started from any time to within the last hour.
- **Page Size:** Choose to list from 10 to 500 jobs per page.
- **Page:** Enter the page you want to display and then press ENTER, or click prev/next to cycle through pages.
- **Refresh:** Select to Manually refresh the page, or set the refresh time to Every 15 Seconds or Every Minute.
- **Refresh Now:** Press to refresh the page, keeping the current information display selections. If instead you use the browser's refresh button, the display is reset to show all jobs in the last hour.

## Viewing ProXchange JobDirector Logs

1. Click the **Configuration** tab at the top of the SystemManager page, and then click the **ProXchange Servers** icon to access the **ProXchange** page.
2. In the **ProXchange JobDirector** section, click the **View Logs** hyperlink to access the **View ProXchange logs** page for a particular JobDirector. A sample page is displayed in *Figure 21–6*.

Current time: Tue Apr 21 10:37:10 2009  
 Displaying log file://10.4.130.20/logs/ombrowse/omb\_watchdog.log.  
 Showing the most recent 1 lines out of 1.

Watchdog    DB Server    ProXchange Synchronizer    Omneon MediaGrid    Transcode    Media Layer

Lines are in Reverse order.  
[Forward Order](#)

**Message**  
 2009-04-21 04:20:12.633865 - huphandler: closed and reopened log path to /var/log/ombrowse/omb\_watchdog.log

**End of log.**

**Figure 21–6: View ProXchange Logs**

This page provides log files and associated properties for the selected JobDirector as follows:

- **Current time:** Shows the date and time when the log was last refreshed.
- **Displaying log file:** Shows the IP address of the JobDirector and the location and name of the associated log file.
- **Showing the most recent...:** Displays the most recent lines in the log file.
- **Watchdog:** Click to display the log file for the watchdog process, which monitors the various ProXchange services, and resets the system, if necessary.

- **DB Server:** Click to display the log file for the database server, which shows every request made by date, IP address of Server, and message. Refer to this log for information when the JobDirector Status page does not update.
- **ProXchange Synchronizer:** Click to display the log file for the ProXchange synchronizer, which monitors the progress of new clips.
- **Omneon MediaGrid:** Click to display which ContentServer processed a transcode job and when it was completed, as well as licensing and grid framework information.**Transcode:** Click to display the transcode server log, which shows when jobs were started and finished. Error messages for ContentServers are also displayed here.
- **Media Layer:** Click to display the log showing when the Omneon MediaGrid is bypassed and the Media Layer is used. Error messages for the Omneon MediaGrid are also displayed here.

## Viewing JobScaler Properties

Follow these steps to view JobScaler Properties:

1. Click the **ProXchange Servers** icon on the Configuration tab to access the **ProXchange** page.
2. In the **ProXchange JobScaler** section, click the **Name** hyperlink for the required unit to access the **Properties** page (*Figure 21–7*).

The screenshot displays the 'ProXchange JobScaler Properties' configuration page. The 'General Information' section includes fields for Name (xcodesvr70\_241), System Up Time (14 days, 4:29:39.87), Hardware Model (PXD2001), Serial Number (703GIG1), and Firmware Version (1.2-20080505). The 'Interface Information' section shows two network interfaces: eth0 (IP 10.30.70.241, MAC 00 1E C9 BA C1 17, MTU 1500) and eth1 (IP 10.30.71.241, MAC 00 1E C9 BA C1 18, MTU 1500). The 'Interface Statistics' section provides transfer rates for both interfaces. The 'Interface Counters' section lists Octets, Unicast Packets, Non Unicast Packets, Discards, and Errors. The 'Local Disk Storage' section shows disk usage for partitions / and /boot. The 'Status' section displays system status, CPU load average, memory utilization, and a 'ProXchange JobScaler Description' input field. The 'Last Message' section shows a recent log entry. At the bottom, there are buttons for Wink on, Reboot, Shutdown, and Done.

**Figure 21–7: ProXchange JobScales Properties**

The following properties are displayed in the **General Information** section:

- **Name:** Shows the assigned name of the JobScaler. This name is automatically generated during installation.
- **System Up Time:** Shows the time the JobScaler has been “up and running” in days, hours, minutes, seconds and fractions of seconds.
- **Hardware Model:** Displays the Harmonic model number for the JobScaler.
- **Serial Number:** Displays the manufacturer’s serial number assigned to the JobScaler.
- **Interface Information**
  - **Interface:** Displays the name of the JobScaler’s connected NIC(s).
  - **IP Address:** Displays the IP address assigned to the JobScaler interface(s).
  - **MAC Address:** Displays the unique hardware number for the JobScaler interface(s).
  - **MTU:** Displays the maximum size of Ethernet packets.
- **Firmware Version:** Shows the version of firmware that resides in the JobScaler’s memory.
- **Status:** Shows the current network status of the JobScaler. This field is used primarily for diagnostic troubleshooting.
- **Status current at:** Shows the most recent date and time that the page was refreshed. Note that this page is automatically refreshed every 10 seconds.
- **CPU Load Average:** Shows the system load averages for the past 1, 5 and 15 minutes on the JobScaler.
- **Memory Utilization:** Shows the total real memory, the available real memory, and the percentage of total free memory for the JobScaler.
- **ProXchange JobScaler Description:** Displays a scrollable multi-line description of the JobScaler. This field is useful for entering data specific details about this JobScaler.
- **Last Message:** Shows the last message (of any type) associated with the JobScaler.
- **Wink State:** Shows the wink state of the JobScaler’s light bar, either **On** or **Off**.
- **Wink on** (button): Click to change the wink state.
- **Reboot** (button): Click to reboot the JobScaler without removing the power supply.
- **Shutdown** (button): Click to shut down the JobScaler. When the **Status** field changes to **Not Responding**, you can power down the JobScaler.

The **Events** section displays the following information when an alarm event occurs:

- **Clear All** (button): Click to clear all of the alarms in the list.
- **Delete All** (button): Click to delete all of the alarms in the list.
- **Level:** Shows the assigned severity level for an alarm event associated with a unit.
- **Time:** Shows the date and time when the alarm event occurred.
- **Event:** Shows the event that triggered the alarm on the unit.
- **Info:** Displays information about the event.
- **Clear?** (button): Displays when the unit has an alarm condition. Resolve the cause of the alarm condition and then click **Clear** to clear the alarm within the unit.
- **Delete** (button): Displays when the unit has an alarm condition. Click to delete the event from the list and clear that event’s Alarm icon.

## Viewing ProXchange JobScaler Logs

1. Click the **Configuration** tab at the top of the SystemManager page, and then click the **ProXchange Servers** icon to access the **ProXchange** page.
2. In the **ProXchange JobScaler** section, click the **View Logs** hyperlink to access the **View ProXchange logs** page for a particular JobScaler. A sample page is displayed in *Figure 21–8*.

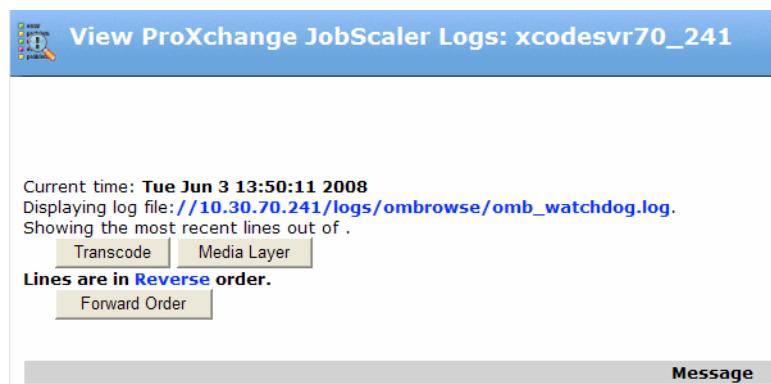


Figure 21–8: View ProXchange Logs for a Job Scaler

This page provides log files and associated properties for the selected JobScaler as follows:

- **Current time:** Shows the date and time when the log was last refreshed.
- **Displaying log file:** Shows the IP address of the JobScaler and location and name of the associated log file.
- **Showing the most recent...:** Shows the most recent lines in the log file.
- **Transcode:** Click to display the transcode server log, which shows when jobs were started and finished. Some error messages are also displayed here.
- **Media Layer:** Click to display the log showing when the Omneon MediaGrid is bypassed and the Media Layer is used. Error messages for accessing the Omneon MediaGrid are also displayed here.
- **Forward Order/ Reverse Order (button):** Click to change the order in which the lines are displayed.

## Performing Management and Troubleshooting on ProXchange Systems

With this release of the SystemManager application, you can perform system management, troubleshooting, and monitoring tasks as follows:

- Use the Dell™ OpenManage™ utility (installed with SystemManager Release 5.0 and later) for RAID and Disk maintenance on ProXchange Systems. See the procedure that follows for additional information.
- Use the SystemManager alarm function to get notification when environmental parameters, such as temperature or fan speeds on a ProXchange JobDirectors and JobScalers reach threshold levels.

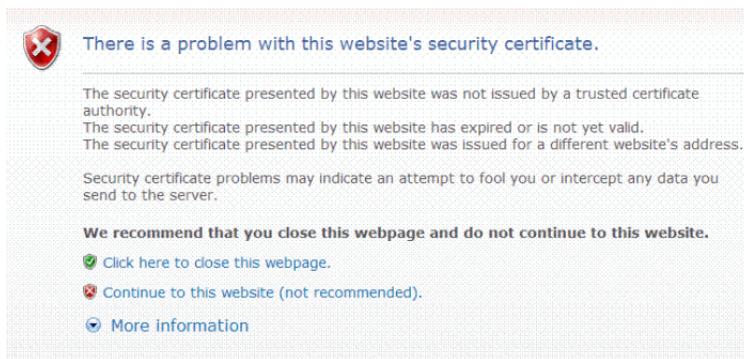
**To access Dell OpenManage:**

1. Click the **Configuration Tab** at the top of the SystemManager page, and then click the **Servers** icon in the **ProXchange** section to access the **Servers List** page.
2. In the **ProXchange JobDirector or JobScaler** sections, click the **System Management** hyperlink to access the Dell OpenManage **Log in** page.



**NOTE:** The first time you attempt to access the Log in page, you will see the warning as displayed in *Figure 21–9*. Click **Continue to this website (not recommended)** to access the Log in page. You will not be presented with this warning in future sessions

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**Figure 21–9: Log in Warning**

Click **Continue to this website (not recommended)** to access the **Log in** page (*Figure 21–10*). You will not be presented with this warning in future sessions



**Figure 21–10: OpenManage Log in**



**NOTE:** On the NSM-2007/K SystemManager Platform, a warning dialog appears when attempting to access the Dell™ OpenManage™ interface for ProXchange via the System Management links. Ignore the warning and proceed to the OpenManage GUI by clicking Continue.

---

3. Log in with the user name and default password for the root account.

The Dell OpenManage window appears as shown in *Figure 21–11*.

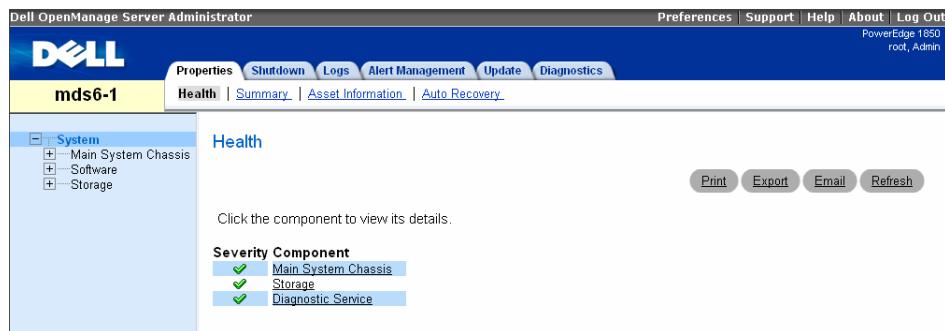


Figure 21–11: OpenManage Window

4. On the left hand navigation column (blue), navigate to the RAID Controller at:  
System > Storage > PERC 4e/Di (Embedded) > Channel 0 (RAID) >  
Backplane > Array Disks  
and/or:  
System > Storage > PERC 4e/Di (Embedded) > Channel 0 (RAID) > Virtual Disks
5. Click the **Help** tab at the top of each page to view information about the page and execute disk related tasks.

## Upgrading ProXchange System Firmware

**To select and install a new ProXchange System firmware version :**

1. On the **Home** tab, click the **Firmware Selection** icon in the left-hand column to display the **Firmware Version Selection** page. A sample page is displayed in *Figure 21–12*.

MediaDeck/Spectrum	ProXchange	ProBrowse	MediaGrid
<input type="checkbox"/> omneon.release4.7sr4 <input type="radio"/> 2007.12.06.13.03-ReleaseCandidate1 <input type="checkbox"/> omneon.release4.7sr3 <input type="radio"/> 2007.11.14.15.28-hf4 <input type="radio"/> 2007.10.12.13.36-hf2 <input type="radio"/> 2007.10.09.20.08-hf2-pre-release-RTM <input type="radio"/> 2007.09.05.09.43-ReleaseCandidate <input type="checkbox"/> omneon.release-5.1 <input type="radio"/> 2008.06.03 <input type="radio"/> 2008.05.09 <input type="checkbox"/> omneon.release-4.8sr3 <input type="radio"/> 2007.10.12.19.13-hf2 <input type="radio"/> 2007.09.04 <input type="checkbox"/> omneon.release-4.7_rel	<input type="checkbox"/> proxchange.nightly <input checked="" type="radio"/> 2008.05.15 ✓ <input type="radio"/> 2008.05.05 <input type="radio"/> 2008.05.02 <input type="radio"/> 2008.05.01 <input type="radio"/> 2008.04.30 <input type="radio"/> 2008.04.27 <input type="radio"/> 2008.04.22.14.05 <input type="radio"/> 2008.04.16 <input type="radio"/> 2008.04.14 <input type="radio"/> 2008.04.11 <input type="checkbox"/> 2008.04.07.12.39 <input type="radio"/> 2008.04.07 <input type="radio"/> 2008.04.03 <input type="radio"/> 2008.03.25	<input type="checkbox"/> probrowse.nightly-2.3 <input checked="" type="radio"/> 2008.06.03.12.13 ✓ <input type="radio"/> 2008.05.21.12.21 <input type="radio"/> 2008.05.11 <input type="radio"/> 2008.04.09 <input type="radio"/> 2008.03.26.15.34 <input type="radio"/> 2008.03.25 <input type="radio"/> 2008.03.24.12.40 <input type="radio"/> 2008.03.20 <input type="radio"/> 2008.03.19 <input type="radio"/> 2008.03.13 <input type="checkbox"/> 2008.03.09 <input type="checkbox"/> probrowse.nightly-2.2 <input type="radio"/> 2008.01.17.12.22 <input type="radio"/> 2008.01.08	<input type="checkbox"/> mediagrid.release-2.1 <input checked="" type="radio"/> 2008.04.23.15.47-2.1SR1Server ✓ <input type="radio"/> 2008.03.03.20.40 <input type="radio"/> 2008.02.28 <input type="radio"/> 2008.02.26.20.50 <input type="radio"/> 2008.02.14.11.56 <input type="radio"/> 2008.01.21 <input type="checkbox"/> mediagrid.release-2.0 <input type="radio"/> 2007.11.01 <input type="radio"/> 2007.10.03.13.33 <input type="radio"/> 2007.10.01.18.42 <input type="radio"/> 2007.10.01 <input type="radio"/> 2007.09.26 <input type="radio"/> 2007.09.21

Choose the directories from which firmware upgrade files will be taken. This page is used to select the firmware directories, but not to perform the upgrade itself.  
To upgrade a device, use the Upgrade Firmware page.

Figure 21–12: Firmware Version Selection

2. In the **ProXchange** column, click the radio button for the desired firmware version. The red check mark indicates the selected version.

3. When the confirmation dialog appears, click **OK** to accept.
4. Click the **Upgrade Firmware** icon in the left-hand column to display the **Upgrade Firmware** page. A sample page is displayed in *Figure 21–13*.

**ProXchange**  
Currently selected upgrade version: **proxchange.nightly/2008.05.15**  
(To select a firmware version for upgrade click the Firmware Selection Icon.)

**ProXchange JobDirector**  
(Note: ProXchange JobDirectors must be rebooted after upgrading.)

Name	IP Address	Status	Current Software Version	Select
<a href="#">xcodesvr8_147</a>	10.30.8.147	Connected	1.2-20080427	<input type="checkbox"/>
<a href="#">xcodesvr70_240</a>	10.30.70.240	Connected	1.2-20080505	<input type="checkbox"/>
<a href="#">xcodesvr8_160</a>	10.30.8.160	Connected -- Warning Alarm	1.0-200706271921	<input type="checkbox"/>
<a href="#">xcodesvr44_100</a>	10.30.44.92	Connected	1.2-200805221354	<input type="checkbox"/>

**Upgrade ProXchange JobDirector**      **Reboot ProXchange JobDirector**      **Select all** **Clear**

**ProXchange JobScaler**  
(Note: ProXchange JobScalers must be rebooted after upgrading.)

Name	IP Address	Status	Current Software Version	Select
<a href="#">xcodesvr70_241</a>	10.30.70.241	Connected	1.2-20080505	<input type="checkbox"/>

**Upgrade ProXchange JobScaler**      **Reboot ProXchange JobScaler**      **Select all** **Clear**

**Figure 21–13: Upgrade Firmware**

5. Scroll to the **ProXchange** section and, in the **ProXchange JobDirector** area, click **Select** to select the units you wish to upgrade.
6. Click **Upgrade ProXchange JobDirector** to upgrade the firmware on the selected units.
7. Select the ProXchange JobDirectors that were upgraded and click **Reboot ProXchange JobDirector** to reboot those units.
8. Once the firmware upgrade is complete, return to the **ProXchange** area of the **Upgrade Firmware** page to verify the version number for the **ProXchange JobDirector**.
9. In the **ProXchange JobScaler** area, click **Select** to select the units you wish to upgrade.
10. Click **Upgrade ProXchange JobScaler** to upgrade the firmware on the selected units.
11. Select the ProXchange JobScalers that were upgraded and click **Reboot ProXchange JobScalers** to reboot those units.
12. Once the firmware upgrade is complete, return to the **ProXchange** area on the **Upgrade Firmware** page to verify the version number for each **ProXchange JobScaler** unit.

This completes the firmware upgrade process for a ProXchange System.

## Part VI: Media Application Server

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# Chapter 22

## Media Application Server Configuration

This chapter provides procedures for managing, monitoring, and troubleshooting a Media Application Server (MAS) system using the SystemManager application. Choose from the following topics:

- [Viewing MAS Clusters in a System](#)
- [Viewing MAS Cluster Properties](#)
- [Viewing MAS Servers in a System](#)
- [Viewing MAS Server Properties](#)
- [Opening the MAS Portal](#)
- [Viewing MAS Log Files](#)
- [Performing Management and Troubleshooting on MAS Systems](#)



**NOTE:** Refer to the *Omneon Media Application Server Installation and Configuration Guide* for detailed instructions on installing or upgrading an MAS System. For information on using your MAS system, refer to the *Omneon Media Application Server User's Guide*.

### Viewing MAS Clusters in a System

To view all MAS Clusters in your system:

1. Click the **Configuration Tab** at the top of the SystemManager page, and then click the **Servers** icon in the **MAS** section of the left-hand column to display the **MAS Clusters** page as shown in *Figure 22–1*.

The screenshot shows the 'Media Application Clusters' page. At the top, there is a 'MAS Clusters' section with a table header: Name (Alias), #Nodes, Notification Enabled, Wink Status, and Select. Below the header, there is a row for '10.4.198.86' with 4 nodes, notification enabled, and a 'Wink Off' status. There are also buttons for 'Wink On', 'Wink Off', 'Select all', and 'Clear'. Below this is a 'MAS Servers' section with a more detailed table. The columns include Name, IP Address, MAC Address, Network Status, System Up Time, Cluster Id, Node Type, Node Status, Virtual IP, Launch, and Wink Status. Four servers are listed: 'msfappnode-2', 'msfappnode-1', 'msfdbnode-1', and 'msfdbnode-2'. Each server has its specific details like IP, MAC, and node type. There are also icons for each server.

Figure 22–1: Viewing MAS Clusters

In the **MAS Clusters** section of the page, you can view the following information:

- **Name (Alias):** Name assigned to the cluster.
- **#Nodes:** Number MAS nodes in each cluster.
- **Notification Enabled:** Indicates whether notifications regarding changes to devices and/or file systems in your network are being sent from SystemManager to the MAS server.
- **Wink Status:** Shows whether or not wink mode is on or off. Note that changing the wink status for a cluster changes the wink status of all the nodes in that cluster.
- **Select:** Click to select a cluster.
- **Wink On (button):** Click to change the wink status of all the selected clusters to On.
- **Wink Off (button):** Click to change the wink status of all the selected clusters to Off.
- **Select All (button):** Click to select all the clusters.
- **Clear (button):** Click to deselect all the clusters.

## Viewing MAS Cluster Properties

To view the properties of an MAS cluster:

1. Click the **Configuration** tab at the top of the SystemManager page, and then click the **MAS Servers** icon in the left-hand column to access the **MAS Clusters** page.
2. Click the name of the MAS Cluster that you wish to view. The **MAS Cluster Properties** page appears, as shown in *Figure 22–2*.

The screenshot shows the 'MAS Cluster Properties' page. At the top, there are fields for 'Name' (10.4.198.86), 'Alias' (empty), and 'Change Alias' button. Below are 'Notification Enabled' (Yes) and '#Nodes' (4) settings. A 'Done' button is on the right. The main section is titled 'Devices in Cluster - 10.4.198.86' and contains a table of MAS servers. The table has columns: Name, IP Address, MAC Address, Network Status, System Up Time, Node Type, Node Status, Virtual IP, Launch, Wink Status, and Select. It lists four nodes: msfappnode-1, msfappnode-2, msfdbnode-1, and msfdbnode-2, each with its specific details like IP, MAC, status, and node type. Buttons at the bottom right include 'Wink On', 'Wink Off', 'Select all', and 'Clear'.

Name	10.4.198.86	Alias:	<input type="text"/>	Change Alias						
Notification Enabled	Yes	<input type="button" value="Disable"/>								
#Nodes	4						<input type="button" value="Done"/>			
<b>Devices in Cluster - 10.4.198.86</b>										
<b>MAS Servers</b>										
Name	IP Address	MAC Address	Network Status	System Up Time	Node Type	Node Status	Virtual IP	Launch	Wink Status	Select
msfappnode-1	10.4.198.84	00 1E C9 BB 99 42	Connected -- Warning Alarm	10 days, 19:46:06.75	appnode1	appNode, ha configured, standby	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="button" value="Wink On"/>	<input type="checkbox"/>
msfappnode-2	10.4.198.85	00 18 8B F7 87 0B	Connected -- Warning Alarm	10:19:16:15.43	appnode2	appNode, ha configured, active	10.4.198.86	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="checkbox"/>
msfdbnode-1	10.4.198.81	00 1E C9 BB 88 85	Not responding -- Warning Alarm	10 days, 23:12:10.64	dbnode1	dbNode, ha configured, active	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="button" value="Wink On"/>	<input type="checkbox"/>
msfdbnode-2	10.4.198.82	00 1E C9 BB A1 C4	Connected	10 days, 22:53:38.75	dbnode2	dbNode, ha configured, active	10.4.198.83	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="checkbox"/>

**Figure 22–2: Viewing MAS Cluster Properties**

At the top of the page, you can view the following information:

- **Name:** shows the name assigned to the cluster. To change the name, type the new name in the **Alias** field and click **Change Alias**.

- **Notification Enabled:** Indicates whether notifications regarding changes to devices and/or file systems in your network are being sent from SystemManager to the MAS server. To enable or disable notification, click the **Enable** or **Disable** button.

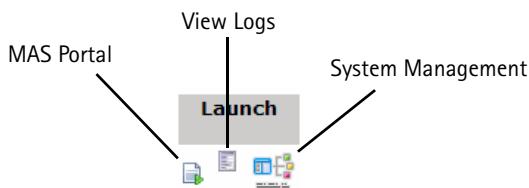


**NOTE:** Harmonic recommends that you keep Notification enabled for your MAS clusters.

- **#Nodes:** Shows the number of MAS nodes in this cluster.

Under **Devices in Cluster**, you can view the following Server information:

- **Name:** Displays the name of the MAS Server. Click the hyperlink to access the **MAS Server Properties** page.
- **IP Address:** Displays the IP address for the eth0 Ethernet interface.
- **MAC Address:** Displays the MAC address of the Server.
- **Network Status:** Displays the MAS Server's current network status, authentication status and security access level, including "Connected," and "Not Responding."
- **System Up Time:** Displays the time the MAS Server has been "up and running" in days, hours, minutes, seconds and fractions of seconds.
- **Node Type:** Displays the type of MAS node that applies to each server, including "appnode" (application node) or "dbnode" (database node).
- **Node Status:** Displays the status of the MAS node, including whether a node is configured in standalone or HA (high availability) mode, and whether a node is configured as an active or standby server.
- **Virtual IP:** Displays the virtual IP address for each server.
- **Launch:** For application nodes, you can click one of the following three icons. Note that for database nodes, only the SystemManagement icon is available.



- **MAS Portal:** Click to launch the MAS Portal for your MAS system.
- **View Logs:** Click to open the MAS log files.
- **System Management:** Click to open the Dell™ OpenManage™ utility to perform system management, troubleshooting, and monitoring tasks.
- **Wink Status:** shows whether the Wink function is enabled on the MAS Server. When Wink is On, front and back panel LEDs flash to identify an MAS Server. Click the Wink buttons at the bottom of the section to turn Wink On/Off.
- **Select:** Click to select the server.
- **Wink On (button):** Click to change the wink status of all the selected servers to On.
- **Wink Off (button):** Click to change the wink status of all the selected servers to Off.
- **Select All (button):** Click to select all the servers.
- **Clear (button):** Click to deselect all the servers.

## Viewing MAS Servers in a System

To view all MAS Servers in your system:

1. Click the **Configuration Tab** at the top of the SystemManager page, and then click the **Servers** icon in the **MAS** section of the left-hand column to display the **Servers** page as shown in *Figure 22–3*.

The screenshot shows the 'Media Application Clusters' page. At the top, there's a header bar with the 'MAS' logo and the title 'Media Application Clusters'. Below the header, the 'MAS Clusters' section displays a table with one row for '10.4.198.86' which has 4 nodes and notification enabled. The 'Wink Status' is off. Below this, the 'MAS Servers' section displays a table with four rows of server details:

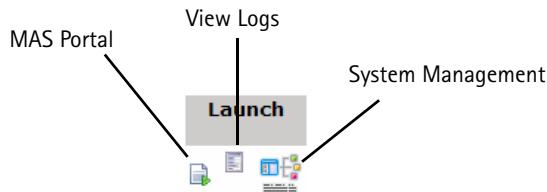
Name	IP Address	MAC Address	Network Status	System Up Time	Cluster Id	Node Type	Node Status	Virtual IP	Launch	Wink Status	Select
<a href="#">msfappnode-2</a>	10.4.198.85	00 1E C9 BB 87 0B	Connected -- Warning Alarm	10 days, 19:13:04.12	10.4.198.86	appnode2	appNode, ha configured, active	10.4.198.86		Off	<input type="checkbox"/>
<a href="#">msfappnode-1</a>	10.4.198.84	00 1E C9 BB 99 42	Connected -- Warning Alarm	10 days, 19:42:55.47	10.4.198.86	appnode1	appNode, ha configured,			Off	<input type="checkbox"/>
<a href="#">msfdbnode-1</a>	10.4.198.81	00 1E C9 BB 88 85	Not responding -- Warning Alarm	10 days, 23:08:50.53	10.4.198.86	dbnode1	standby			Off	<input type="checkbox"/>
<a href="#">msfdbnode-2</a>	10.4.198.82	00 1E C9 BB A1 C4	Connected	10 days, 22:50:27.46	10.4.198.86	dbnode2	dbNode, ha configured, active	10.4.198.83		Off	<input type="checkbox"/>

At the bottom of the 'MAS Servers' section, there are buttons for 'Wink On', 'Wink Off', 'Select all', and 'Clear'.

Figure 22–3: Viewing MAS Servers

In the **MAS Servers** section of the page, you can view the following information:

- **Name:** Displays the name of the MAS Server. Click the hyperlink to access the **MAS Server Properties** page.
- **IP Address:** Displays the Server's IP address.
- **MAC Address:** Displays the MAC address of the Server.
- **Network Status:** Displays the MAS Server's current network status, authentication status and security access level, including "Connected," and "Not Responding."
- **System Up Time:** Displays the time the MAS Server has been "up and running" in days, hours, minutes, seconds and fractions of seconds.
- **Cluster ID:** The name of the Cluster.
- **Node Type:** Displays the type of MAS node that applies to each server, including "appnode" (application node) or "dbnode" (database node).
- **Node Status:** Displays the status of the MAS node, including whether a node is configured in HA (high availability) mode, and whether a node is configured as an active or standby server.
- **Virtual IP:** Displays the virtual IP address for each server.
- **Launch:** For application nodes, you can click one of the following three icons. Note that for database nodes, only the SystemManagement icon is available.:



- ❑ **MAS Portal:** Click to launch the MAS Portal for your MAS system.
- ❑ **View Logs:** Click to open the MAS log files.
- ❑ **System Management:** Click to open the Dell™ OpenManage™ utility to perform system management, troubleshooting, and monitoring tasks.
- **Wink Status:** shows whether the Wink function is enabled on the MAS Server. When Wink is On, front and back panel LEDs flash to identify an MAS Server. Click the Wink buttons at the bottom of the section to turn Wink On/Off.
- **Select:** Click the **Select** check box to select an MAS Server.
- **Wink on (button):** Click to change the wink status of all the selected units to On.
- **Wink off (button):** Click to change the wink status of all the selected units to Off.
- **Select all (button):** Click to select all the MAS Servers.
- **Clear (button):** Click to deselect all MAS Servers.

## Viewing MAS Server Properties

To view the properties of an MAS server:

1. Click the **Configuration** tab at the top of the SystemManager page, and then click the **MAS Servers** icon in the left-hand column to access the **MAS Servers** page.
2. Click the name of the MAS Server that you wish to view. The **MAS Server Properties** page appears, as shown in *Figure 22–4*.

<b>MAS Server Properties</b>																													
<b>General Information:</b>																													
<table border="1"> <tr><td><b>Name</b></td><td>msfappnode-1</td></tr> <tr><td><b>Mode</b></td><td>appnode1</td></tr> <tr><td><b>System Up Time</b></td><td>10 days, 20:07:02.06</td></tr> <tr><td><b>Hardware Model</b></td><td>Unknown</td></tr> <tr><td><b>Serial Number</b></td><td>Unknown</td></tr> <tr><td><b>Firmware Version</b></td><td>3.0.0.0-20091005</td></tr> </table>					<b>Name</b>	msfappnode-1	<b>Mode</b>	appnode1	<b>System Up Time</b>	10 days, 20:07:02.06	<b>Hardware Model</b>	Unknown	<b>Serial Number</b>	Unknown	<b>Firmware Version</b>	3.0.0.0-20091005													
<b>Name</b>	msfappnode-1																												
<b>Mode</b>	appnode1																												
<b>System Up Time</b>	10 days, 20:07:02.06																												
<b>Hardware Model</b>	Unknown																												
<b>Serial Number</b>	Unknown																												
<b>Firmware Version</b>	3.0.0.0-20091005																												
<b>Interface Information</b>																													
<table border="1"> <thead> <tr> <th>Interface</th><th>eth0</th><th>eth1</th></tr> </thead> <tbody> <tr><td><b>IP Address</b></td><td>10.4.198.84</td><td>192.168.100.103</td></tr> <tr><td><b>MAC Address</b></td><td>00 1E C9 BB 99 42</td><td>00 1E C9 BB 99 43</td></tr> <tr><td><b>MTU</b></td><td>1500</td><td>1500</td></tr> </tbody> </table>					Interface	eth0	eth1	<b>IP Address</b>	10.4.198.84	192.168.100.103	<b>MAC Address</b>	00 1E C9 BB 99 42	00 1E C9 BB 99 43	<b>MTU</b>	1500	1500													
Interface	eth0	eth1																											
<b>IP Address</b>	10.4.198.84	192.168.100.103																											
<b>MAC Address</b>	00 1E C9 BB 99 42	00 1E C9 BB 99 43																											
<b>MTU</b>	1500	1500																											
<b>Interface Statistics</b>																													
<table border="1"> <thead> <tr> <th>Transfer Rate</th><th>eth0 Receive</th><th>eth0 Transmit</th><th>eth1 Receive</th><th>eth1 Transmit</th></tr> </thead> <tbody> <tr><td></td><td>1372811</td><td>0</td><td></td><td></td></tr> </tbody> </table>					Transfer Rate	eth0 Receive	eth0 Transmit	eth1 Receive	eth1 Transmit		1372811	0																	
Transfer Rate	eth0 Receive	eth0 Transmit	eth1 Receive	eth1 Transmit																									
	1372811	0																											
<b>Interface Counters (since agent boot)</b>																													
<table border="1"> <thead> <tr> <th>Octets</th><th>eth0 Receive</th><th>eth0 Transmit</th><th>eth1 Receive</th><th>eth1 Transmit</th></tr> </thead> <tbody> <tr><td><b>Unicast Packets</b></td><td>3886158539</td><td>2871073187</td><td>0</td><td>0</td></tr> <tr><td><b>Non Unicast Packets</b></td><td></td><td></td><td></td><td></td></tr> <tr><td><b>Discards</b></td><td>2459872370</td><td>2443985196</td><td>0</td><td>0</td></tr> <tr><td><b>Errors</b></td><td></td><td></td><td>MB/s</td><td>MB/s</td></tr> </tbody> </table>					Octets	eth0 Receive	eth0 Transmit	eth1 Receive	eth1 Transmit	<b>Unicast Packets</b>	3886158539	2871073187	0	0	<b>Non Unicast Packets</b>					<b>Discards</b>	2459872370	2443985196	0	0	<b>Errors</b>			MB/s	MB/s
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<b>Local Disk Storage</b>																													
<table border="1"> <thead> <tr> <th>FS(Partition) Name</th><th>Total Space (KB)</th><th>Used Space (KB)</th><th>Available Space (KB)</th><th>Used %</th></tr> </thead> <tbody> <tr><td>/</td><td>49594228</td><td>7159256</td><td>39875016</td><td>16</td></tr> <tr><td>/var/log</td><td>9920592</td><td>1717260</td><td>7691264</td><td>19</td></tr> <tr><td>/boot</td><td>194442</td><td>24266</td><td>160137</td><td>14</td></tr> </tbody> </table>					FS(Partition) Name	Total Space (KB)	Used Space (KB)	Available Space (KB)	Used %	/	49594228	7159256	39875016	16	/var/log	9920592	1717260	7691264	19	/boot	194442	24266	160137	14					
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<table border="1"> <thead> <tr> <th>Process</th><th>State</th></tr> </thead> <tbody> <tr><td>smb</td><td>Running</td></tr> <tr><td>msf-ha</td><td>Running</td></tr> <tr><td>msf-rpc</td><td>Running</td></tr> <tr><td>msf-app-server</td><td>Running</td></tr> <tr><td>msf-omserver</td><td>Running</td></tr> <tr><td>logrotate</td><td>Stopped</td></tr> </tbody> </table>					Process	State	smb	Running	msf-ha	Running	msf-rpc	Running	msf-app-server	Running	msf-omserver	Running	logrotate	Stopped											
Process	State																												
smb	Running																												
msf-ha	Running																												
msf-rpc	Running																												
msf-app-server	Running																												
msf-omserver	Running																												
logrotate	Stopped																												
<b>Status</b>	Connected -- Warning Alarm																												
<b>Status current at</b>	Tue Oct 6 09:45:54 2009																												
<b>CPU Load Average</b>	1.30, 1.15, 1.24 (over 1, 5, 15 minutes)																												
<b>Memory Utilization</b>	Total Memory: INTEGER: 8177756 KB, Free Memory:INTEGER: 133848 KB (0% free)																												
<b>MAS Server Description</b>	<div style="border: 1px solid #ccc; padding: 5px; height: 40px; width: 100%;"></div> <div style="text-align: right; margin-top: -5px;">Change Desc</div>																												
<b>Last Message</b>	Tue:09:45:49: Successfully checked/added trap destination record with Manager's IP address.																												
<b>Wink State</b>	Off																												
<input type="button" value="Wink on"/> <input type="button" value="Reboot"/> <input type="button" value="Shutdown"/>																													

Figure 22–4: MAS Server Properties

You can view the following information:

- **Name:** Displays the assigned name for the component.
- **Mode:** Displays whether the server is configured in standalone or HA (high availability) mode.
- **System Up Time:** Displays the time the component has been “up and running” in days, hours, minutes, seconds, and fractions of seconds.
- **Hardware Model:** Displays the Harmonic model number for the component.
- **Serial Number:** Displays the manufacturer’s serial number assigned to the component.
- **Firmware Version:** Displays the version of firmware that resides in the component’s memory.
- **Interface Information:**
  - **Interface:** Displays the available interfaces for the unit.
  - **IP Address:** Displays the IP address assigned to each unit’s interface.
  - **MAC Address:** Displays the unique hardware number for each unit’s interface.

- **MTU:** Shows the maximum size of Ethernet packets. An MTU greater than 1500 bytes indicates that Jumbo Frames are enabled.
- **Interface Statistics:** Shows the receive and transmit rate for each interface
- **Interface Counters:** Shows the raw interface counters since the the SNMP agent was last booted.
- **Local Disk Storage:** Shows the name of each file system (partition), as well as the Total Space, Used Space, Available Space, and percentage of available space used, for each file system.
- **Process Monitoring:** Shows the state of each of the MAS services.
- **Status:** Displays the current network status for the selected component. This field is used primarily for diagnostic troubleshooting.
- **Status current at:** Displays the most recent date and time that the page was refreshed. Note that the page is automatically refreshed every 30 seconds, unless configured otherwise.
- **CPU Load Average:** Displays the system load averages for the past 1, 5, and 15 minutes on the component.
- **Memory Utilization:** Displays the total real memory, the available real memory, and the percentage of total free memory for the component.
- **MAS Server Description:** Displays a scrollable multi-line description of the component. This field is useful for entering data that clarifies the specific component's role in a MAS System. Click **Change Desc** to enter or revise data.
- **Last Message:** Displays the last message (of any type) associated with the component.
- **Wink State:** Displays the wink state of the component's light bar, either **On** or **Off**.
- **Wink On/Off (button):** Click to change the wink state of the MAS Server.
- **Reboot (button):** Click to reboot the MAS Server without removing power from the unit.
- **Shutdown (button):** Click to shut down the MAS server. When the status of the MAS server changes to **Not Responding**, you can power down the server. Refer to "Shutting down the Server" in the *Omneon Media Application Server User Guide*.

The **Events** section displays the following information when an alarm event occurs:

- **Level:** Displays the assigned severity level for an alarm event associated with a unit.
- **Time:** Displays the date and time when the alarm event occurred.
- **Event:** Displays the event which triggered the alarm on the unit.
- **Info:** Provides information on each event.
- **Clear? (button):** Displays when the unit has an alarm condition. Resolve the cause of the alarm condition and then click Clear to clear the alarm within the unit.
- **Delete (button):** Display when the unit has an alarm condition. Click to delete the event from the list and clear that event's Alarm icon.

## Opening the MAS Portal

To open the MAS portal:

1. From the **MAS Clusters** page, in the MAS Servers section of the page, in the **Launch** column, click the **MAS Portal** icon, as shown in *Figure 22–5*.

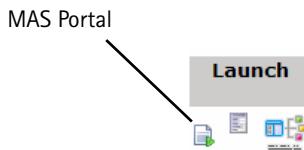


Figure 22–5: Launch the MAS Portal

A new browser window appears and prompts for a user name and password.

2. Enter the MAS user name and password in the dialog box.
3. Click **OK** to log in.



**NOTE:** If you are logging in for the first time, you will be required to enter the license key. Enter the license key provided by Harmonic and click **OK**.

## Viewing MAS Log Files

To view the MAS log files:

1. From the **MAS Clusters** page, in the MAS Servers section of the page, in the **Launch** column, click the **View Logs** icon, as shown in *Figure 22–5*.



Figure 22–6: Viewing the MAS log files

A new browser window appears, which contains links to each of the log files, as shown in *Figure 22–7*.

**Directory Listing For /log/ - Up To /**

Filename	Size	Last Modified
<a href="#">.msf-app-server.log.swp</a>	280.0 kb	Sat, 26 Sep 2009 02:25:41 GMT
<a href="#">boot.log</a>	73.4 kb	Tue, 29 Sep 2009 19:47:14 GMT
<a href="#">createSchema.log</a>	0.1 kb	Tue, 29 Sep 2009 19:47:11 GMT
<a href="#">dbUpgrade.log</a>	0.1 kb	Mon, 28 Sep 2009 20:44:20 GMT
<a href="#">msf-app-server.log</a>	99946.2 kb	Tue, 29 Sep 2009 23:26:22 GMT
<a href="#">msf-app-server.log.1</a>	102400.1 kb	Thu, 24 Sep 2009 09:55:01 GMT
<a href="#">msf-app-server.log.10</a>	102400.1 kb	Sat, 19 Sep 2009 23:44:44 GMT
<a href="#">msf-app-server.log.2</a>	102400.1 kb	Wed, 23 Sep 2009 00:35:53 GMT
<a href="#">msf-app-server.log.3</a>	102400.0 kb	Wed, 23 Sep 2009 00:34:57 GMT
<a href="#">msf-app-server.log.4</a>	102400.0 kb	Wed, 23 Sep 2009 00:33:56 GMT
<a href="#">msf-app-server.log.5</a>	102400.2 kb	Wed, 23 Sep 2009 00:32:54 GMT
<a href="#">msf-app-server.log.6</a>	102400.6 kb	Tue, 22 Sep 2009 04:56:00 GMT
<a href="#">msf-app-server.log.7</a>	102400.0 kb	Sat, 19 Sep 2009 23:52:40 GMT
<a href="#">msf-app-server.log.8</a>	102400.0 kb	Sat, 19 Sep 2009 23:51:43 GMT
<a href="#">msf-app-server.log.9</a>	102400.2 kb	Sat, 19 Sep 2009 23:48:40 GMT

Figure 22–7: MAS log files

## Performing Management and Troubleshooting on MAS Systems

With this release of the SystemManager application, you can perform system management, troubleshooting, and monitoring tasks as follows:

- Use the Dell™ OpenManage™ utility for RAID and Disk maintenance on MAS Systems. See the procedure that follows for additional information.
- Use the SystemManager alarm function to get notification when environmental parameters, such as temperature or fan speeds on MAS Servers reach threshold levels.

### To access Dell OpenManage:

1. Click the **Configuration Tab** at the top of the SystemManager page, and then click the **MAS Servers** icon in the left-hand column to open the **MAS Clusters** page.
2. In the **MAS Servers** section of the page, in the **Launch** column, click the **System Management** icon, as shown in [Figure 22–5](#), to access the Dell OpenManage Log in page.

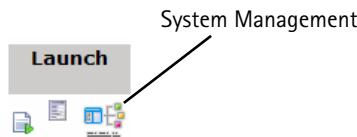
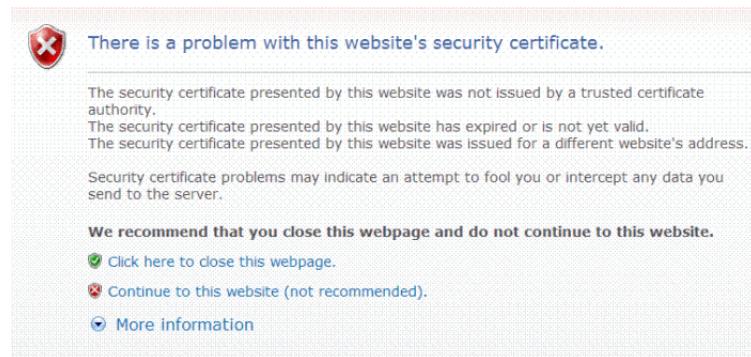


Figure 22–8: Accessing Dell OpenManage



**NOTE:** The first time you attempt to access the Log in page, you will see the warning as displayed in [Figure 22–9](#). Click **Continue to this website (not recommended)** to access the Log in page. You will not be presented with this warning in future sessions

Figure 22–9: Log in Warning



Click **Continue to this website (not recommended)** to access the Log in page (*Figure 22–10*). You will not be presented with this warning in future sessions



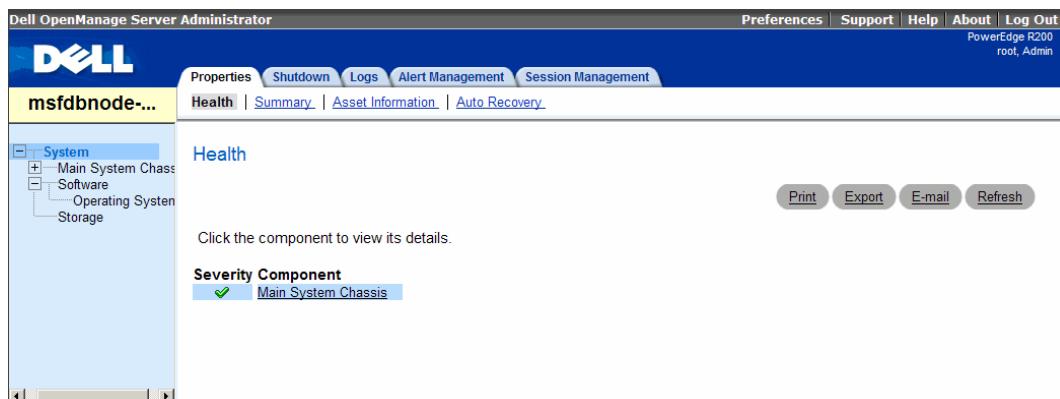
**Figure 22–10:** OpenManage Log in



**NOTE:** On the NSM-2007/K SystemManager Platform, a warning dialog appears when attempting to access the Dell™ OpenManage™ interface for ProXchange via the System Management links. Ignore the warning and proceed to the OpenManage GUI by clicking Continue.

3. Log in with the user name and default password for the root account.

The Dell OpenManage window appears as shown in *Figure 22–11*.



**Figure 22–11:** OpenManage Window

4. Click the **Help** tab at the top of each page to view information about the page and execute disk related tasks.

# Appendix A

## Contacting the Technical Assistance Center

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

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

Region	Telephone Technical Support	E-mail
Americas	888.673.4896 or 408.490.6477	<a href="mailto:support@harmonicinc.com">support@harmonicinc.com</a>
EME	+44.1252.555.450	<a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a>
Asia Pacific – Other Territories	+852.3713.9300	<a href="mailto:hongkongtechsupport@harmonicinc.com">hongkongtechsupport@harmonicinc.com</a>
India	+44.1252.555.450	<a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a>
Russia	+7.495.926.4608	<a href="mailto:rusupport@harmonicinc.com">rusupport@harmonicinc.com</a>
Africa	+44.1252.555.450	<a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a>
Mainland China	+86.10.8391.3313	<a href="mailto:chinatechsupport@harmonicinc.com">chinatechsupport@harmonicinc.com</a>

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

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

The Harmonic Inc. support website is:

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

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

<ftp://ftp.harmonicinc.com>

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

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

**The Harmonic Inc. corporate address is:**

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

The corporate telephone numbers for Harmonic Inc. are:

Tel. 1.800.788.1330 (from the U.S. and Canada)  
Tel. +1.408.542.2500 (outside the U.S. and Canada)  
Fax.+1.408.542.2511

# Appendix B

## Compliance, Safety, and Agency Approvals

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**NOTE:** The information in this appendix may apply to purchased products.

---

This equipment generates, uses, and can radiate radio frequency energy. It may cause harmful interference to radio communications if it is not installed and used in accordance with the instructions in this manual. Operation of this equipment in a residential area is likely to cause harmful interference. If this occurs, the user will be required to correct the interference at his or her own expense.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15, Subpart B of the Federal Communications Commission (FCC) rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Connections between the Harmonic equipment and other equipment must be made in a manner that is consistent with maintaining compliance with FCC radio frequency emission limits.

Modifications to this equipment not expressly approved by Harmonic may void the authority granted to the user by the FCC to operate this equipment.

### WEEE/RoHS Compliance Policy

Harmonic Inc. intends to comply fully with the European Union's Directive 2002/96/EC as amended, on Waste Electrical and Electronic Equipment, also known as "WEEE," and Directive 2002/95/EC, as amended, on the Restriction of use of Hazardous Substances, also known as "RoHS."

Harmonic will ensure that product which cannot be reused will be recycled in compliance with the WEEE Directive. To that end, users are advised that (1) Harmonic equipment is not to be discarded in household or office garbage, (2) Harmonic Inc. will pay the freight for shipment of equipment to be disposed of if it is returned to Harmonic, (3) customers should call the normal RMA telephone numbers to arrange for such shipment, and (4) for additional and updated information on this process customers may consult the Harmonic website: [http://harmonicinc.com/pa\\_weee\\_recycle.cfm](http://harmonicinc.com/pa_weee_recycle.cfm).

Harmonic will ensure that its products will be either reused or recycled in compliance with the WEEE Directive. For the latest information concerning Harmonic's WEEE/RoHS Compliance Policy and its Recycling and Take-Back process, please visit our web site.



## Restricted Substance Statement

Harmonic products contain less than the permitted limits for the six restricted substances except where exemptions published in the RoHS Directive are applicable. This statement is based on vendor-supplied analysis or material certifications, and/or lab test results of the component raw materials used in the manufacture of Harmonic products.

Restricted Substance	Permitted limit*
Cadmium (Cd)	≤ 0.01% (Cd)
Lead (Pb)	≤ 0.1% (Pb)
Chromium (VI) (Cr (VI))	≤ 0.1% (Cr VI)
Mercury (Hg)	≤ 0.1% (Hg)
Polybrominated Biphenyls (PBBs)	≤ 0.1% (PBBs)

\*Homogeneous material definition as per the EU Directive.

## 产品中的有毒有害物质或元素的名称及含量表

### Names and Contents of Toxic and Hazardous Substances

This section lists the names of contents of toxic or hazardous substances, or elements in the products if the part is present.

该表显示哈雷公司产品中可能含有的有毒有害物质元配件的信息，除了来源于元配件供应商的物料成分资料，亦来自其它相关的机构与资料。哈雷产品不一定使用这些元配件。

This table shows those components where hazardous substances may be found in Harmonic products based on, among other things, material content information provided by third party suppliers. These components may or may not be part of the product.

除非特殊注明，哈雷公司产品的环保使用期限 均为 20 年。该环保使用期限的有效条件为：必须遵循该产品使用手册的规定，对该产品进行使用或存储。

The Environmental Protective Use Period for Harmonic products is 20 years unless displayed otherwise on the product. The EPUP period is valid only when the products are operated or stored as per the conditions specified in the product manual.

部件名称 (Part name)	有毒有害物质或元素 (Hazardous Substance)					
	铅 (PB)	汞 (Hg)	镉 (Cd)	六价铬 (CrVI)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷线路板 (Printed Circuit Assemblies)	X	O	O	O	O	O
机械组件 (Mechanical Subassemblies)	X	O	O	O	O	O
光学组件 (Optical Subassemblies)	X	O	O	O	O	O
电源 (Power Supplies)	X	O	O	O	O	O
缆线 / 线束 (Cables, harnesses)	X	O	O	O	O	O
屏幕 / 显示器 (Screens, Monitors)	X	O	O	O	O	O
金属零件 (Metal Parts)	O	O	O	O	O	O
塑料 / 发泡材料 (Plastics, foams)	O	O	O	O	O	O
电池 (Batteries)	O	O	O	O	O	O

O: 表示在该部件的所有均质材料中，此类有毒有害物质的含量均小于 SJ/T11363-2006 标准所规定的限量。

O: Indicates the content of the toxic and hazardous substances at the homogeneous material level of the parts is below the limit defined in SJ/T11363 2006 standard.

X: 表示至少在该部件的某一均质材料中，此类有毒有害物质的含量超出 SJ/T11363-2006 标准规定的限量。

X: Indicates that the content of the toxic and hazardous substances in at least one of the homogeneous materials of the parts is above the limit defined in SJ/T11363 2006 standard.

기종별	사용자 안내문
A급 기기 (업무용 정보통신기기)	이기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의 하시기 바라며 만약 잘못 판매 구입 하였을 때에는 가정용으로 교환하시기 바랍니다.

## Standards and Agency Approval

The following tables list regulatory standards and agency approvals:

## North America

Standards	Agency Approval
EMI: FCC Part 15, Subpart B, ICES-003, Issue 2, Class A	FCC
Safety: UL60950-1, CAN/CSA C22.2 No. 60950-1	cTUV-us Mark

## Europe

Standards	Agency Approval
EMI/EMC: EN55022 Class A, EN55024, EN61000-3-2 and EN61000-3-3	CE
Safety: EN 60950-1, EN60825-1	TUV-GS or T-Mark, CE
RoHS2: Directive 2011/65/EU	CE

## Japan

Standards	Agency Approval
EMI: VCCI V-3, VCCI V-3 / 2000.04, VCCI V-3 2009	VCCI

## Australia and New Zealand

Standards	Agency Approval
EMI: AS/NZS CISPR22	AS/NZS CISPR22

## Canadian EMC Notice of Compliance

English: This digital apparatus does not exceed the Class A limits for the radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Commerce.

French: Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

### EU Manufacturer's Declaration of Conformity

We: Harmonic, Inc.

Declare under our sole responsibility that the products identified below comply with the following EU Directives and Harmonized Standards stated.

Applicable EU Directives for ContentBridge:

Regulatory Compliance	Directive(s)	Notes
<b>ContentBridge 1000</b>		
EMC	FCC Part 15, ICES-003 CISPR 22 2004/108/EC Electromagnetic Compatibility including amendments	Class A for Digital Equipment, USA, Canada EN55022, EN61000-3-2, EN61000-3-3, and EN55024
Safety	TUV 2006/95/EC Low Voltage Directive including amendments	UL60950-1, CAN/CSA-C22.2 No. 60950-1Safety of Information Technology Equipment
<b>ContentBridge 2010A</b>		
EMC	FCC ICES CE Mark  VCCI BSMI C-Tick SABS CCC MIC	Class A Class B EN 55022 Class B, EN55024, EN61000-3-2, EN61000-3-3 Class B Class A Class B Class B Class B Class A
Safety	UL CAN/CSA EN IEC	UL 60950-1 CAN/CSA-C22.2 No. 60950-1 EN 60950-1, EN60825-1, EN60825-2 IEC60950-1

Regulatory Compliance	Directive(s)	Notes
<b>ContentBridge 2010B/2010C</b>		
EMC	ACMA or C-Tick BELLIS KVALITET ICES CNCA or CCC KONCAR CE SII VCCI OTAN – CKT INSM NEMKO GOST SABS KCC BSMI UKRTEST or UKRSERTCOMPUTER FCC STZ ICT	Class A
Safety	IRAM BELLIS SCC CNCA or CCC KONCAR CE TUV IEC6E IEC6E CB SII OTAN – CKT KEBS KUCAS NYCE or NOM INSM SONCAP NEMKO GOST KSA ICCP NRCS BSMI UKRTEST or UKRSERTCOMPUTER NRTL STZ	

Applicable EU Directives for ContentDirector:

Regulatory Compliance	Directive(s)	Notes
<b>ContentDirector 1000C, 10000D, and 2000</b>		
EMC	ACMA or C-Tick BELLIS KVALITET ICES CNCA or CCC KONCAR CE SII VCCI OTAN – CKT INSM NEMKO GOST SABS KCC BSMI UKRTEST or UKRSERTCOMPUTER FCC STZ ICT	Class A
Safety	IRAM BELLIS SCC CNCA or CCC KONCAR CE TUV IECEE IECEE CB SII OTAN – CKT KEBS KUCAS NYCE or NOM INSM SONCAP NEMKO GOST KSA ICCP NRCS BSMI UKRTEST or UKRSERTCOMPUTER NRTL STZ	

Applicable EU Directives for ContentServer and ContentStore:

Regulatory Compliance	Directive(s)	Notes
<b>ContentServer 1042B/1042C-DP</b>		
EMC	FCC Part 15, ICES-003 CISPR 22 89/336/EEC Electromagnetic Compatibility including amendments	Class A for Digital Equipment, USA, Canada EN55022A:1998+A1:2000 +A2:2003 EN61000-3-2:2000, EN61000-3-3:1995+A1:2001 EN55024:1998 +A1:2001+A2:2003 Immunity
Safety	TUV 73/23/EEC Low Voltage Directive including amendments	UL60950-1: 2003 CAN/CSA-C22.2 60950-1-3 Safety of Information Technology Equipment
<b>ContentServer 2122/2124</b>		
EMC	FCC Part 15, ICES-003 CISPR 22 89/336/EEC Electromagnetic Compatibility including amendments	Class A for Digital Equipment, USA, Canada EN55022 EMISSIONS EN61000-3-2, EN61000-3-3 EN55024 Immunity
Safety	UL60950 73/23/EEC Low Voltage Directive including amendments	IEC 60950 CAN/CSA-C22.2 60950 Safety of Information Technology Equipment
<b>ContentServer 3000</b>		
EMC	FCC (CFR 47, Part 15) Class A IECS-003, Issue 3, Class A	EN 55022, EN1000-2-3, EN1000-3-3 EN55024, AS/NZS 3548 (CISPR-22 Class A) VCCI V-3
Safety	IEC/EN 60950-1: CB report and CB certificate UL/CSA 60950-1: cTUVus-mark	
<b>ContentStore 3160</b>		

Regulatory Compliance	Directive(s)	Notes
EMC	FCC (CFR 47, Part 15) Class A IECS-003, Issue 3, Class A	EN 55022, EN1000-2-3, EN1000-3-3 EN55024, AS/NZS 3548 (CISPR-22 Class A) VCCI V-3
Safety	IEC/EN 60950-1: CB report and CB certificate UL/CSA 60950-1: cTUVus-mark	

Applicable EU Directives for Network Switch 2924, 2948 and 5406:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	EN60950-1 Safety of Information Technology Equipment
EMC	FCC VCCI EN CISPR-22	Class A Class A 55022 Class A
Safety	CSA 22.2  UL IEC EN	No. 60950-1 60950-1 60950-1 60950-1

Applicable EU Directives for the MediaDeck 7000:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive (73/23/EEC) including amendments	EN60950-1: 1992, A1 + A2 + A3 + A4 Safety of Information Technology Equipment
EMC	FCC Part 15, ICES-003 ICES-003 Directive of Electromagnetic Compatibility EN55022: 1998 EN55024: 1998 CISPR 22	Class A for Digital Equipment, USA Class A for Digital Equipment, Canada (89/336/EEC) including amendments  Emissions from Information Technology Equipment Immunity for Information Technology Equipment Class A Others

Applicable EU Directives for the MediaDirector 2201, 2202, 2251, 2252, and the MediaCenter:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is 2006/95/EC, EMC directive is: 2004/108/EC	EN 60950-1 Safety of Information Technology Equipment
EMC	FCC Part 15 Class A ICES-003 VCCI Class A CISPR 22 Class A CNS 13438 EN 55022 Class A KN22 Class A	USA Canada Japan Australia, New Zealand, EU Taiwan EU Korea
Safety	UL 60950-1 First, Second Edition CSA C22.2	

Applicable EU Directives for MediaPort Series 5000, MediaPort 7000 Series, and ChannelPort:

Regulatory Compliance	Directive(s)	Notes
<b>MediaPort 5000 Series, MediaPort 7000 Series, and ChannelPort</b>		
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	EN60950-1 Safety of Information Technology Equipment
EMC	FCC Part 15, ICES-003 ICES-003 Directive of Electromagnetic Compatibility EN55022 EN55024 CISPR22	Class A for Digital Equipment, USA Class A for Digital Equipment, Canada (89/336/EEC) including amendments  Emissions from Information Technology Equipment Immunity for Information Technology Equipment Class A Others
Safety	UL/CUL, CAN/CSA C22.2 No. 950-95 Third Edition and UL1950 Third Edition UL/CUL, CAN/CSA C22.2 No. 60950-1-03 First Edition and UL60950-1 First Edition	
<b>ChannelPort</b>		
Safety	UL 670950-1, 2nd Edition CSA C22.2 No. 60950-1-03, 2nd Edition IEC 60950-1:2005 (Second Edition) EN 670950-1,2006 + A11:2009	

Applicable EU Directives for the Ellipse 1000 and 2000:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22, KN22 and KN24	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

Applicable EU Directives for the Electra 1000, 5000, 5400, and 9200 encoders:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

Applicable EU Directives for the Electra 8000 encoders:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22, KN22 and KN24	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

Applicable EU Directives for the ION AVC HD, ION AVC SD, ION MPEG-2, ION MPEG-4 AVC, and ION Multichannel encoders:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

Applicable EU Directives for ProStream 1000, 2000, 4000, 4500, 5000, and 8000:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

Applicable EU Directives for the MV400, MV450, and MV500 MPEG-2:

Regulatory Compliance	Directive(s)	Notes
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

## Important Safeguards and Notices

This section provides important safety guidelines for both the Operator and Service Personnel. Specific warnings and cautions are found throughout the guide where they apply, but may not appear here. Please read and follow the important safety information, noting especially those instructions related to risk of fire, electric shock or injury to persons.

## Safety and Regulatory Information for the ContentServer 3000 and ContentStore 3160

**Danger:** Class 1 laser product.

**Attention:** Produit laser de classe 1

**Warnung:** Laserprodukt der Klasse 1

This equipment contains optical transceivers, which comply with the limits of Class 1 laser radiation. Visible and invisible laser radiation may be emitted from the aperture of the optical transceiver ports when no cable is connected. Avoid exposure to laser radiation and do not stare into open apertures.

### Lithium Battery Notice for Service Personnel

This product contains a lithium battery. Although the battery is not field-serviceable, observe the following warning:

Mark	Notes
	<p><b>CAUTION:</b> Danger of explosion if battery is replaced with incorrect type. Replace only with the same type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.</p> <p><b>WARNING: CALIFORNIA PERCHLORATE ADVISORY</b> Some lithium batteries, may contain perchlorate material. The following advisory is provided: "Perchlorate Material – special handling may apply, see <a href="http://www.dtsc.ca.gov/hazardouswaste/perchlorate/">www.dtsc.ca.gov/hazardouswaste/perchlorate/</a>" for information.</p> <p><b>ATTENTION:</b> Il y a danger d'explosion s'il a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant</p> <p><b>WARNUNG:</b> Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.</p>
	<p><b>WARNING:</b> This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors).</p> <p><b>ATTENTION:</b> Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifier qu'un fusible ou qu'un disjoncteur de 120 V alt., 15 A U.S. maximum (240 V alt., 10 A international) est utilisé sur les conducteurs de phase (conducteurs de charge).</p>

Mark	Notes
	<p><b>WARNUNG:</b> Dieses Produkt ist darauf angewiesen, daß im Gebäude ein Kurzschluß- bzw. Überstromschutz installiert ist. Stellen Sie sicher, daß eine Sicherung oder ein Unterbrecher von nicht mehr als 240 V Wechselstrom, 10 A (bzw. in den USA 120 V Wechselstrom, 15 A) an den Phasenleitern (allen stromführenden Leitern) verwendet wird.</p>
	<p><b>WARNING:</b> To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. These guidelines are provided to ensure your safety:</p> <ul style="list-style-type: none"> <li>■ This unit should be mounted at the bottom of the rack if it is the only unit in the rack.</li> <li>■ When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.</li> <li>■ If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.</li> </ul>
	<p><b>ATTENTION:</b> Pour éviter toute blessure corporelle pendant les opérations de montage ou de réparation de cette unité en casier, il convient de prendre des précautions spéciales afin de maintenir la stabilité du système. Les directives ci-dessous sont destinées à assurer la protection du personnel.</p> <ul style="list-style-type: none"> <li>■ Si cette unité constitue la seule unité montée en casier, elle doit être placée dans le bas.</li> <li>■ Si cette unité est montée dans un casier partiellement rempli, charger le casier de bas en haut en plaçant l'élément le plus lourd dans le bas.</li> <li>■ Si le casier est équipé de dispositifs stabilisateurs, installer les stabilisateurs avant de monter ou de réparer l'unité en casier.</li> </ul>
	<p><b>WARNUNG:</b> Zur Vermeidung von Körperverletzung beim Anbringen oder Warten dieser Einheit in einem Gestell müssen Sie besondere Vorkehrungen treffen, um sicherzustellen, daß das System stabil bleibt. Die folgenden Richtlinien sollen zur Gewährleistung Ihrer Sicherheit dienen:</p> <ul style="list-style-type: none"> <li>■ Wenn diese Einheit die einzige im Gestell ist, sollte sie unten im Gestell angebracht werden.</li> <li>■ Bei Anbringung dieser Einheit in einem zum Teil gefüllten Gestell ist das Gestell von unten nach oben zu laden, wobei das schwerste Bauteil unten im Gestell anzubringen ist.</li> <li>■ Wird das Gestell mit Stabilisierungszubehör geliefert, sind zuerst die Stabilisatoren zu installieren, bevor Sie die Einheit im Gestell anbringen oder sie warten.</li> </ul>

The Technical File is available to proper authorities and the product is marked.

## Safety Symbols

The product is marked with these symbols when it is necessary to refer to the manuals to prevent damage to the product.

Symbol	Name	Description
	Caution	<p>Please observe the following important cautions:</p> <ul style="list-style-type: none"><li>■ When installing this equipment, always comply with the National Electrical Standard and local electrical standard for attachment of the power cords.</li><li>■ Risk of explosion if battery is replaced incorrectly or with an incorrect type. There are no user-serviceable batteries inside products. Refer to qualified personnel only to service the replaceable batteries. Dispose of batteries according to the instructions.</li><li>■ Use only specified replacement parts.</li><li>■ Follow static precautions at all times when handling this equipment.</li><li>■ Slots and openings in the chassis are provided for ventilation. Do not block them. Leave the back of the frame clear for air exhaust cooling and to allow room for cabling — a minimum of 6 inches (15.25 cm) of clearance is recommended.</li><li>■ Disconnect <i>all</i> AC power supplies when servicing any unit.</li></ul>
	Warning	<p>Please observe the following important warnings:</p> <ul style="list-style-type: none"><li>■ Any instructions in this guide that require opening the chassis or removing a board should be performed by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing unless you are qualified to do so.</li><li>■ Heed all warnings on the unit and in the operating instructions.</li><li>■ Do not use this product in or near water. Disconnect all AC power before installing any options or servicing the unit unless instructed to do so by this manual.</li><li>■ This product is grounded through the power cord grounding conductor. To avoid electric shock, plug the power cord into a properly wired receptacle before connecting the product inputs or outputs.</li></ul>

Symbol	Name	Description
		<ul style="list-style-type: none"> <li>■ Route power cords and other cables so that they are not likely to be damaged. Disconnect power before cleaning. Do not use liquid or aerosol cleaners; use only a damp cloth.</li> <li>■ Dangerous voltages exist at several points in this product. To avoid personal injury, do not touch exposed connections and components while power is on. Do not insert anything into either of the system's two power supply cavities with power connected.</li> <li>■ Do not wear hand jewelry or watches when troubleshooting high current circuits, such as the power supplies.</li> <li>■ To avoid fire hazard, use only the specified correct type, voltage and current rating as referenced in the appropriate parts list for this product. Always refer fuse replacement to qualified service personnel.</li> <li>■ Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading."</li> </ul>
	Laser Warning	<p>Please observe the following laser warnings:</p> <ul style="list-style-type: none"> <li>■ Invisible Laser Radiation, when open or when operating with the fiber disconnected. AVOID DIRECT EXPOSURE TO THE BEAM. Never operate a unit with a broken fiber or with a separated fiber connector.</li> </ul>

## Safety Precautions

To avoid injury and prevent equipment damage, observe the following safety precautions:

- Do not move or ship equipment unless it is correctly packed in its original wrapping and shipping containers.
- Only Harmonic trained personnel can undertake equipment service and maintenance.
- To prevent damage by lightning, ground the unit according to local regulations.
- Do not permit unqualified personnel to operate the unit.

## AC Power Supply to the Unit

To ensure correctly and safely operation of the unit, the following are required:

- Adding to the system a UPS (Uninterrupted Power Supply) and an AVR (Automated Voltage Regulator) is highly recommended.

- Installing the main power supply by a qualified electrician, according to power authority regulations. Make sure all powering are wired with an earth leakage, according to local regulations.
- It is recommended to install the encoder within 1.5m (approximately 5 feet) from an easily accessible grounded AC outlet.
- When the encoder is rack-mounted, ensure that the rack is correctly grounded.



**DANGER:** To ensure that the rack is correctly grounded by a qualified electrician. Incorrectly grounded equipment may result in electrical shock.

## DC Power Supply to the Unit

In the case the unit is fitted with DC power inputs, the following are required:

- Never work on DC powered equipment while power is applied. Disconnect power before making connections to the device.
- Ensure a suitable overcurrent device is inline between the equipment and the power source.

## Rack Mount Instructions

- Elevated Operating Ambient: If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature ( $T_{ma}$ ) specified by the manufacturer.
- Reduced Air Flow: Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Mechanical Loading: Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Earthing: Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

## Handling Fibre Channel Cables

- Always read and comply with the handling instructions on the shipping container.
- Follow all ESD precautions and approved fiber cleaning procedures.
- The fiber is made of a very pure, expensive glass and should be treated with great care. Handle fibers only in areas that are very clean and do not contain sharp objects.
- Wear finger cots or gloves as dirt and oils can damage the fiber and contaminate connectors.
- Do not allow kinks or knots to develop in the fiber. If tangles occur, carefully work out the tangles avoiding pulling or bending the fibre beyond its bend radius.
- Always use the correct tools for stripping and cleaving the fiber. It will save time and reduce breakage caused by scratches.

- If you must secure a bundle of fiber cables together, avoid plastic and metal tie wraps; secure with velcro instead.

## Product End-of-Life Disassembly Instructions

This section provides instruction for the disassembly of the indicated Harmonic Spectrum MediaDeck 7000 product family in order to remove components requiring selective treatment, as defined by the EU WEEE Directive (2002/96/EC).

Description	Notes	Qty in the product	Location
Printed Circuit Board Assemblies (PCBA) (PCBA)	With a surface greater than 10 sq. cm (Additional PCBA-s may be present depending on the configuration)	2	Inside the chassis
Batteries	All types including standard alkaline and lithium coin or button style batteries	1	LITHIUM COIN, P/N 57-1006 3V,20MM,2PIN on the main Base board. California USE Only: Perchlorate Material - For handling see: <a href="http://www.dtsc.ca.gov/hazardouswaste/perchlorate">www.dtsc.ca.gov/ hazardouswaste/ perchlorate</a>
Mercury-containing components	For example, mercury in display backlights, switches, batteries	None	
Liquid Crystal Displays (LCD) with a surface greater than 100 sq cm	Includes background illuminated displays	None	
Video display device	With a screen size of more than 10 cm measured diagonally	None	
Cathode Ray Tubes (CRT)	None	None	
Capacitors / condensers (Containing PCB/PCT)		None	
Electrolytic Capacitors / Condensers measuring greater than 2.5 cm in diameter or height		None	
External electrical cables and cords		2	
Gas Discharge Lamps		None	

Description	Notes	Qty in the product	Location
Plastics containing Brominated Flame Retardants		None	
Components and parts containing toner and ink, including liquids, semi-liquids (gel/paste) and toner		None	
Components and waste containing asbestos		None	
Fiber-optic cables		None	
Laser parts		None	
Radioactive components, parts or materials		None	

The following table lists the required tools.

Description	Size
Philips screw drivers	#1 and #2
Flat-head screw driver	small
Flat-head screw driver	large
Diagonal-cutting pliers, long-nose pliers	~5"
Sockets	11/32", 1/2", 5/8", and 9/16" (deep)
Special tools to remove specific components	Not needed

### Product Disassembly Process

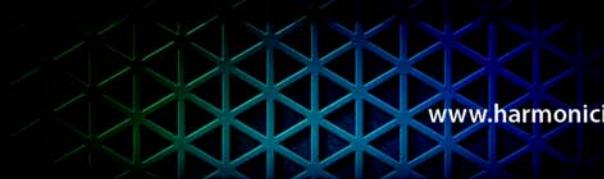
1. Disassemble equipment at a dedicated area only, gather the needed tools for disassembly.
2. Remove covers, housing, etc.
3. Remove and separate subassemblies (i.e. lasers, cables, metals, displays, fans, etc.).
4. Separate hazardous materials from the remainder of the material.
  - a. Sort hazardous materials into their different types (i.e., batteries, hazardous liquids, hazardous solids, fiberglass, etc.).
  - b. Proceed with hazardous waste management processes only.
5. Identify re-usable materials/subassemblies and separate these from the rest of the material.
6. Identify and separate recyclable materials as per below examples:
  - a. Scrap material to be sent to smelter(s).
  - b. E-waste such as displays, CPU's, cables and wires, hard drives, keyboards, etc.
  - c. Metals such as steel, brass, and aluminum.
  - d. Plastics such as fan casings, housings, covers, etc.

- e. Fiber optics and plastic tubing not containing electrical or data wiring.

## Safety Rules

Recycler personnel are to wear personal protective equipment including proper eye protection, proper hand protection, and proper breathing protection if needed.

Recycler personnel shall be experienced with using the proper tools required for disassembling equipment. Untrained personnel shall not disassemble Harmonic products. Unfamiliarity with tools can cause damage and injury.

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