Cerify
Automated Video Content Verification System

User Manual

077-0352-06

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Automated Video Content Verification System

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www.tektronix.com

077-0352-06

This document supports software version 7.3 and above.

Cerify Technical Support

To obtain technical support for your Cerify system, send an e-mail to the following address: cerify-support@tek.com.

Contacting Tektronix

Tektronix, Inc.
14150 SW Karl Braun Drive
P.O. Box 500
Beaverton, OR 97077
USA

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Acknowledgements

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Expat. This product uses the Expat XML Parser, expat.sourceforge.net.

FFmpeg. This product uses software developed by the FFmpeg project, ffmpeg.mplayerhq.hu. Specifically, support for DV is provided by some components of the libavcodec and libavutil libraries.

HardingFPA OEM Interface library. This product uses HardingFPA OEM Interface library for PSE analysis developed by and used under license from Cambridge Research Systems. http://www.crsltd.com/

HTMLUNIT. This product includes software developed by Gargoyle Software Inc. http://www.GargoyleSoftware.com/

Java This product uses Java™ technology. The TM and technology are explicitly required by Sun (http://www.sun.com/policies/trademarks).

JBoss. Modifications have been made to the source code of the JBoss application server. This source code is available on request.

JCIFS. This product uses the Java CIFS Client Library, jcifs.samba.org.

JDIC This product uses the JDIC Java integration components. jdic.dev.java.net

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JUnit. This product uses the JUnit regression testing framework, www.junit.org.

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Preface

Cerify is an automated system for testing compressed digital media before transmission or use. Through a Web-based interface, users can create Jobs, which will perform a sequence of checks on a set of media files, and view the results.

Contents of this Manual

This manual describes the system in detail, provides procedures for using the system, and includes full reference documentation.

- *Getting Started* describes the system capabilities, configuration, and first time operation.
- *Operating Basics* provides a functional overview, basic concepts, and tutorials for using the system.
- *Reference* provides detailed information about each page (or window, or menu item) in the user interface.
- *Appendix A: Alerts* lists and defines all the stream compliance and integrity checks that can be carried out.
- *Appendix B: Supported Compression Standards* describes compression standards and file formats that the system recognizes.
- *Appendix C: Software Maintenance* details the procedure to reinitialize the Cerify application and to upgrade the license dongle options.
- *Appendix D: CeriTalk* provides information about an XML-based API that lets you interact with Cerify from within other applications, making it possible to integrate Cerify with other content management, broadcast automation, and workflow systems.
- *Appendix E: Configuring Your Cerify Installation* provides information on modes of operation, configuring your installation for best performance and commercial off-the-shelf platform recommendations.

Related Documentation

The following related documents support the product:

- Cerify Online Help (Tektronix part number, 076-0198-xx)
- Cerify Release Notes
- Cerify Third Party Software License Notice Document (Tektronix part number, 001-1513-xx)
- Cerify Quick Start User Manual (Tektronix part number, 071-2680-xx)
- Read This First (Tektronix part number, 061-4355-xx)

Product Description

This is a media testing product which runs either on a single computer or on a cluster of two or more dedicated computers connected on a network running Microsoft Windows. This automated video content verification system can be used to check for correct digital encoding and against baseband quality parameters. It provides both broadcast and production operations with a fast, cost effective QC solution.

Cerify can be integrated with your existing infrastructure using the CeriTalk API to interface with asset management systems and provide a completely automated workflow. A Web based user interface allows test results to be viewed from any network connected workstation.

System Components

Cerify accesses digital media from local storage, such as a local hard drive or DVD, as well as network storage, such as a Windows file server or FTP server.

A Cerify system can be set up in two basic ways:

- The first consists of a single self-contained unit which runs all the management and testing processes of the system.
- The second consists of a networked cluster of three or more units, which enables simultaneous processing of a greater number of files. The networked cluster contains a single Supervisor and one or more Media Test Units.

License Dongle

The license dongle must be plugged into the USB port on your computer to run the application. In a clustered system, Media Test Units acquire their licenses from the Supervisor.

License dongle

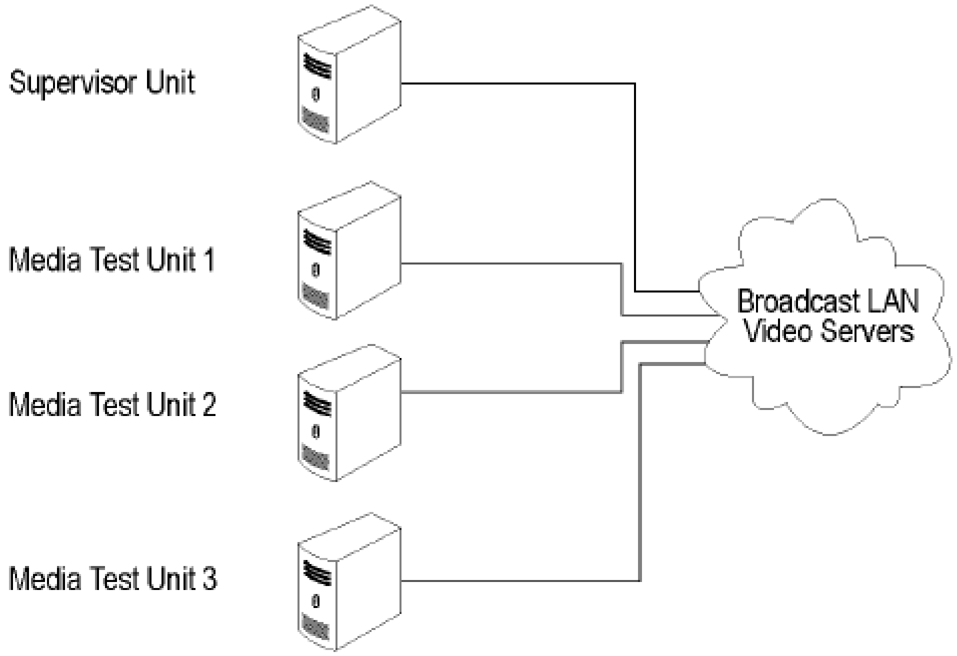
It is possible to navigate the user interface and see previous results when no dongle is installed, but it is not possible to carry out new checks of digital media files. The license dongle controls:

- The types of codecs and file formats that can be checked.
- The number of channels that can be used.
- For demo dongles, when the license will expire.
- Server configuration (there can only be one Supervisor unit in a cluster)

NOTE. *If you unplug a dongle and plug in another dongle, or if the connected dongle is upgraded with a new v2c file, a restart of Cerify is necessary for the license dongle to work correctly.*

Networking

In a clustered configuration, network interface on all of the units, including the Supervisor and Media Test Units, should be connected to the local area network. This connection is used to access media files, to service Web clients, and to carry cluster control traffic.



Clustering topology

Software Components

Software components include:

- A Web-based user interface, which allows users to create and control Jobs, and to view or report the results of these Jobs. This interface is accessed over the network by using a Web browser. All you need to know is the IP address of your unit.
- Media test service, which performs media file verification according to the rules chosen by the user.
- A database, which provides robust storage of the system entities, including users, Jobs, and Job results.
- An XML-based control and reporting API known as CeriTalk. CeriTalk allows interaction with Cerify from within other applications, making it possible to integrate Cerify with other content management, broadcast automation, and workflow systems.
- A Web application server that provides access to the Web interface and runs the core services for the application.
- A license server, which controls the types of files that can be verified.
- The system tray icon and menu, which provides access to the Cerify Web-based user interface and allows the application to be started and stopped.

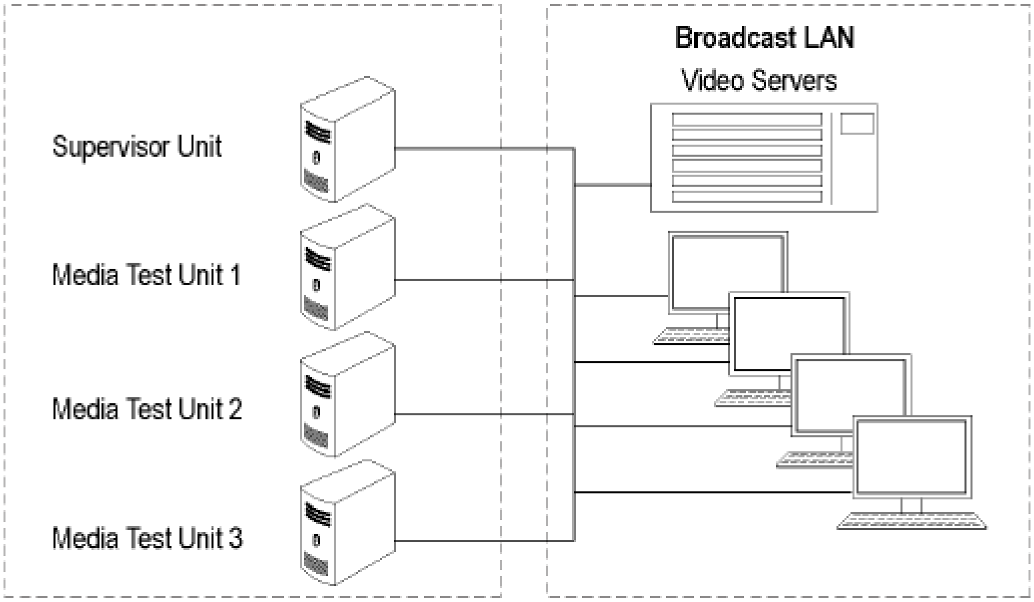
Cerify as a Standalone System

A standalone system is a single machine that combines the functions of a Supervisor unit and a Media Test Unit. The process that carries out the media file testing is known as the Media Test Client (MTC).

Cerify Cluster

The Supervisor unit controls the cluster system. It hosts the database and the Web server, allowing multiple users to set up and view Jobs. It is responsible for locating the media files from the network, but delegates actual transfer and processing of these files to one or more Media Test Units. The Supervisor unit organizes and stores the resulting outputs.

Each Media Test Unit is responsible for processing the digital media files in a networked cluster. It applies the user-specified tests, and reports back the results. The Supervisor can also be configured to process the files.



Local area networking

Clustering Requirements.

- Two or more PCs with 64-bit Windows Server 2008 SE OS installed.
- Administrator privileges on all the machines on which the Cerify software will be installed.
- Meet the minimum Hardware specifications.
- All the clustering PCs should be in the same network with correctly configured Static IP addresses.
- All of the PCs in the cluster should be able to route to each other. The Supervisor unit is given a network name that is recognized and resolved by all the Media Test Units.
- You should know the fully qualified name of the Supervisor unit and provide this when Media Test Units installer asks for the name of the Supervisor unit.
- All the Media Test Units should reside on the same network as the Supervisor unit.
- If the Supervisor or Media Test Units have more than one network interfaces, it is better to bridge all the network interfaces together. For instructions on configuring the network bridge, refer to Configuring a Network Bridge (see page 19).
- Synchronization between all the units in cluster must be maintained. For example, use an NTP server to synchronize the units in a cluster.

Clustering Scenarios Which may not Work

Clusters may not work in the following scenarios:

- If the Supervisor and the Media Test Unit are in different subnets wherein the switch blocks the multicast or UDP traffic.
- If any of Supervisor or Media Test Unit systems has Windows firewall running.
- If a Media Test Unit cannot resolve Supervisor host name.
- If the Supervisor does not have a host name or if the Supervisor has a host name with Japanese or Chinese characters.
- If a network has another system with the same host name as the Supervisor system.
- If the host name of the Supervisor changes after cluster installation.
- If the http port on the Supervisor is configured to a different port number after cluster installation (In this case, Media Test Unit cerify.properties, the property cerify.supervisor.httpport must be changed to the new port number).
- If either the Supervisor or the Media Test Unit has multiple network interfaces and the IP addresses change after the installation. In this case, the property cerify.jboss.bindaddress must to be changed to the current IP address.
- If the Supervisor has multiple network interfaces connected to the same network and if DNS/WINS are not configured properly, troubleshoot this problem by doing either of the following:
  - By adding an entry containing the Supervisor host name and the IP address used by Cerify on Supervisor in "hosts" file, which can be found in `C:\WINDOWS\system32\drivers\etc` in all the Media Test Units.
  - By bridging all the network interfaces together.
- Clusters might not work correctly if there is momentary network outage in which case the clusters have to be restarted.

System Installation

This section provides details of hardware, software and user prerequisites for the system and instructions on performing the software installation.

Prerequisites

Hardware Prerequisites

Cerify is designed to be run on a variety of PC hardware. Consequently, the choice of hardware is determined by performance and throughput requirements for your installation.

This section recommends hardware configuration for some situations in which Cerify is typically used.

Single Channel Installation. A single channel installation of Cerify is one that is licensed to test a single media file at a time. Such installations are normally performed on a PC or a laptop computer and are suitable for situations where a low throughput is sufficient and performance is not critical.

It is recommended that you use a computer that meets the following minimum requirements for such installations:

- Processor speed: 2 GHz

  Cerify is a CPU-intensive application. For better results, choose a dual core system with a clock speed of 3 GHz and as much on-chip memory cache as possible.

- Memory: 2 GB RAM

  It is recommended to use a minimum of 1 GB to a maximum of 3 GB per channel and an additional 1 GB for the operating system and the application. For best performance on a single channel install, this would be:

  1 channel x 3 GB + 1 GB = 4 GB

- Hard disk drive: 50 GB of free space

  The amount of hard disk storage necessary depends on the average size of the files that you will be testing and the mode of operation of Cerify that applies to the file formats that you are testing. Refer to Modes of Operation (see page 214) for details on the different modes of operation and how they impact disk space requirements.

- A network interface
- A DVD drive (used for installing the software)
- A USB port for connecting the license dongle
- A license dongle (provided with the product)

Multi-channel Enterprise Installation. A typical multi-channel installation of Cerify tests 4-8 media files at a time on a single unit. Due to the high throughput and performance requirements that are expected from such installations, it is recommended that server class hardware and operating systems be used in such cases.

In addition to the throughput required, the hardware requirements for such installations also depend heavily on the mode of operation that will be used.

Cerify can operate in two modes:

- Streaming mode

  In this mode, media files are read directly from the media server hosting the file and are not copied to the local hard disk of the Cerify system. This is the default mode of operation and is also the preferred one.

- Copying mode

  Media files are copied to the local hard disk of the Cerify system before processing can begin. By default, Cerify will not copy files to the local hard disk, but it is possible to force Cerify to operate in this mode.

The mode of operation that applies to your Cerify installation depends on the file formats you would like to test and other work flow and connectivity related constraints that might apply to your situation. See the Modes of Operation (see page 214) for a detailed discussion on the factors that influence this.

The functional differences between these two modes of operation impact primarily on the disk space availability and disk configuration requirements. Specifically, the copying mode requires a greater amount of disk space and high levels of concurrent read/write performance from the hard drives in order for best overall performance while the streaming mode can derive comparable overall performance with a lesser amount of disk space and lower read/write efficiency. Consequently, when possible, the streaming mode should be used in preference to copying mode.

For multi-channel installations, the general guidelines that should be followed when selecting hardware (the values given are the minimum recommended for a 4-channel installation) are:

- Processor: 3 GHz

  Ensure you have twice as many cores as the number of channels. For a 4-channel installation, this means that you should have eight cores available. It is also recommended that for best performance, you choose as much on-chip memory cache as possible.

NOTE. *The ProRes decoder is capable of using as many processors as available to improve processing performance. If you are processing ProRes media files, having more processor cores than the recommended two per channel might improve performance.*

- Memory: 6 GB RAM

  Recommend a minimum of 1 GB to a maximum of 3 GB per channel and an additional 1 GB to 4 GB for the operating system and the Cerify database. For the best performance with 4 channels, this would be:

  4-channels x 3 GB + 4 GB = 16 GB

- Hard disk drive: 100 GB x 3

  For an enterprise installation, Tektronix recommends using a RAID on which to place the MS Windows and Cerify installation (including database) to achieve fault tolerance in case of disk failure. This logical drive should be at least 100 GB in size. For systems that are expected to support high levels of throughput, it is recommended that you have 500 GB of space on this logical drive.

  The amount of additional storage you need depends on the mode of operation that applies to your installation, the average size of the files you will be processing and the number of channels you will be running.

  - Streaming mode

    Due to the minimal hard disk utilization when operating in the streaming mode, it is sufficient to provide a single dedicated hard disk of 100 GB in size as temporary storage for Cerify.

  - Copying mode

    The minimum hard disk space provided must be greater than the average file size being processed multiplied by the number of channels. It is recommended that the temporary storage be RAID-ed for better performance.

  For help choosing the optimal number of hard disks for your installation and the best RAID levels to use, see Configuring Your Cerify Installation for Best Performance (see page 217).

- Network interface: 1 Gbit/s

  You might use multiple network interfaces to improve available network bandwidth.

- Integrated RAID controller
- A DVD drive (used for installing the software)
- A USB port, for connecting the license dongle
- A license dongle (provided with the product)
- Redundant power supply

For more detailed specification of a validated enterprise PC platform, see Commercial off-the-Shelf Recommendations (see page 221).

Supported Platforms

- Windows XP - 32 bit and 64 bit
- Windows Vista - 32 bit and 64 bit
- Windows 7 - 32 bit and 64 bit
- Windows Server 2003 64-bit
- Windows Server 2008 64-bit

NOTE. *Apple ProRes, Generic QuickTime and JPEG 2000 Video decoding functions are not available on Microsoft Windows XP 64 bit and Windows Server 2003 because the QuickTime Player is not supported on these platforms.*

Software Prerequisites

The computer on which the application is installed will need the following:

- To run one of the Supported Platforms.
- To access the system through its Web user interface from another computer on the network, the client computer must have a Web browser installed.

NOTE. *To access the application, the preferred Web browser is Microsoft Internet Explorer (version 7.0 and above). The application has also been tested with Mozilla Firefox. There may be minor visual differences in the appearance of the user interface in different Web browsers.*

Software Installation

Before installing the Cerify application, your PC must be correctly connected to your local network. This allows:

- The Cerify application to test the files that are available on other machines on the network.
- Other machines to interact with Cerify automatically (for example, using CeriTalk automation clients, or copying of report files to network locations).
- Multiple users to connect to the Cerify Web user interface from remote computers.

For the last two cases, you need to know the IP address or the network name of the machine that Cerify is installed on. Network settings on the PC are configured in the usual manner using Windows. If your machine is not properly configured or you do not know the name or IP address information, contact your system administrator.

Installing Cerify

The installation of the Cerify takes several minutes; typically between 5 and 15 minutes depending on the speed of your PC. To install Cerify, perform the following steps:

1. Run the Cerify Installer.
2. Insert the Cerify dongle.
3. *Optional*: Install Apple QuickTime Player.

Before installing the Cerify , you should be aware of the following issues:

1. Cerify relies on third-party software applications that are packaged and installed with it: JBoss and MySQL. If these applications are already used on the PC, you should remove them before attempting to install the Cerify.
2. The Cerify license server relies on Aladdin HASP SRM drivers, which are installed and configured along with it. It is recommended that other applications that rely on HASP licenses not be used with Cerify on the same machine.
3. Cerify uses a number of network services that are local to the host PC. These services can sometimes be blocked by personal firewall software, in which case an error message will be displayed when Cerify starts. For example, on Cerify start up, a check is made to verify that communication with HASP can be established. If the Cerify application is unable to communicate with HASP, an error message, **Unable to connect to HASP License Manager (port 1947). Please check if the HASP License Manager service is running and is not blocked by a firewall** is displayed and Cerify is stopped.

   In such situations, configure the firewall to allow the service on the appropriate port, or alternatively disable the firewall entirely.
4. It is recommended that the Cerify application should be installed on a machine where it can be used as the sole running application. Cerify makes intensive use of both CPU and memory and will considerably degrade the performance of other running applications. Similarly, running other applications or services simultaneously will degrade the performance of Cerify and increase the time taken to process a media file.

Running the Cerify Installer.

- Ensure that you are logged in as a user with administrator privileges.

NOTE. *If you try to install the Cerify application without administrator privileges, the following message appears: "The Cerify application can be installed or uninstalled only by a system administrator. Please log in as administrator and try again".*

- Insert the Cerify DVD provided by Tektronix. The Cerify Application Browser opens. Click the **Install Cerify** link to launch the Cerify installer. Follow the on-screen instructions to perform the installation.

NOTE. *If you try to install the Cerify application on an unsupported platform (refer to Supported Platforms (see page 15)), then the following message appears: "This is not a supported Windows operating system. Cerify will probably operate correctly but has not been validated on this OS. Do you wish to continue installation?"*

If the browser does not open, or if the **Install Cerify** link does not work, navigate to the **Exec** folder on the DVD and double-click **CerifySetup<version>.exe**. Follow the on-screen instructions to perform the installation.

A number of third party software applications are installed during the installation process. Most of these are not visible, but you will be notified as the WinPcap and HASP drivers are installed.

NOTE. *WinPcap is not used in the normal operation of the Cerify application. It is used when you collect support diagnostics to troubleshoot networking issues with Cerify. For more information on support diagnostics, refer to Capturing Cerify Status Information Using the Support Monitor Script (see page 199).*

Installation Options

Cerify can be installed in the following ways:

- Standalone
- Supervisor: The Supervisor unit controls the cluster system. It hosts the database and the Web server, allowing multiple users to set up and view Jobs.
- Media Test Unit: Each Media Test Unit is responsible for processing the digital media files in a networked cluster.

NOTE. *During the installation of Cerify, if there are multiple network interfaces in the system, the installer provides the list of IP addresses and asks the user to select an IP address to be used by Cerify.*

Installing Cerify as a Supervisor. Follow the steps described in Run Cerify Installer (see page 17) and Installing Cerify (see page 16) to install Cerify as a Supervisor. During the installation, a dialog box appears with the list of installation options. To continue with the Supervisor installation, select **Supervisor** in the installation options dialog box. Sometime during the installation, a dialog box appears where you must:

- Enable or disable file-processing option on the Supervisor.
- Enter the number of channels if you have selected the file processing option on the Supervisor.
- Choose the IP address to be used by Cerify.

At the end of the installation, the installer prompts you with an option to load the demo content. If you choose this option, Cerify will be loaded with a demo database, which will contain some sample jobs with results.

Installing Cerify as a Media Test Unit. Follow the steps described in Run Cerify Installer (see page 17) and Installing Cerify (see page 16) to install Cerify as a Media Test Unit. During the installation, a dialog box appears with the list of installation options. To continue with an Media Test Unit installation, select **Media Test Unit** in the installation options dialog box. Sometime during the installation, a dialog box appears where you must:

- Enter the host name of the Supervisor.
- Choose the IP address to be used by Cerify.
- Enter the number of channels.

Configuring a Cluster. To configure a cluster, you must:

- Install Cerify as a Supervisor on the system which must be configured as supervisor of the cluster.
- Install Cerify as a Media Test Unit on one or more systems.

When installing Cerify as a Media Test Unit, the installer prompts you to enter the supervisor host name. The installer checks whether the Media Test Unit can reach the Supervisor system using the host name entered. If the Supervisor system cannot be reached, a message appears whether you still want to continue the installation.

You can also configure multiple clusters on the same network. To configure multiple clusters on the same network, you need to install multiple Supervisors. During a Media Test Unit installation, in the Cerify System Settings dialog box, you must enter the respective Supervisor host name.

NOTE. *To configure a cluster, the versions of Cerify on the Supervisor and the Media Test Unit should be the same. Once the installation is complete, Cerify will be started on both the Supervisor and the Media Test Unit. Access Supervisor using Cerify Web UI and navigate to the Admin page, click the* ***Media Test Units*** *link to the page containing the list of Media Test Units.*

Upgrading and Uninstalling a Cluster. Insert the installer CD and follow the on-screen instructions. To upgrade a cluster, do the following:

- Upgrade Cerify on the Supervisor by running the latest version of installer and choosing Supervisor as installer type.
- Upgrade Cerify on all of the Media Test Units by running the latest version of installer and choosing Media Test Unit as the installer type.

Refer to the Software Upgrade (see page 22) section for instructions on upgrading.

To uninstall a cluster, do the following:

- Uninstall Cerify on the Supervisor.
- Uninstall Cerify on all of the Media Test Units.

Refer to the Software Uninstallation (see page 21) section for instructions on uninstallation.

Configuring a Network Bridge. If the system has multiple network adapters, it is recommended that you bridge all the network adapters.

1. From the **Start** menu, select **Control Panel** > **Network Connections**.
2. Select two network adapters at the same time, right-click and select **Bridge Connections**. Windows will build up a network bridge automatically. When the bridge is built successfully, the IP address of the two adapters disappears.
3. Select the **Network Bridge** and configure a new IP address in the **Properties** menu for LAN connections.

Installation Folders. During the installation process, select the following locations:

- **Installation Location**: The folder where the application is installed.
- **Temporary Storage Location**: Before processing media files from an external server, Cerify may need to copy the remote files to the PC on which the Cerify application is installed. This folder is used as the location to store such temporary copies. Cerify copies the file only when operating in copy mode and accesses the file using the ftp://, smb://, or gvg:// protocols. See Modes of Operation (see page 214) for help determining the mode that applies to your installation.

NOTE. *There should be sufficient free space in the temp folder to store large video files. The location for this temp folder can be on any drive on the computer.*

If you would like multiple users to be able to run the Cerify application on the PC, make sure to select a location that has read and write permissions for those users. A temporary directory located within a users private directory is not suitable in this case.

Insert the Cerify Dongle.

Insert the Cerify license dongle supplied with the system in any of the available USB ports of your computer.

NOTE. *Do not insert the dongle before the Cerify installation. Insert the dongle only when the installer prompts you.*

NOTE. *If Cerify reports license failures after the dongle has been installed, it is possible that firewall software is interfering with the license service. Please ensure that port 1947 is open in any firewall software that is in use.*

The number of files that can be simultaneously processed by Cerify will be the number of allowed channels specified in the dongle. If a time-expiry dongle is connected, the default number of files processed is 1.

Sometimes, you will need to change the number of files that can be simultaneously processed by Cerify. You can change the number of parallel processing channel setting by changing the value of the property “cerify.processorsperbox” in “cerify.properties” file located at `<Installation Directory>/Cerify/JBoss/server/all/conf`.

The following lists the different situations for standalone installation:

- When Cerify is started with no dongle connected, then (irrespective of whether a value has been specified in the “cerify.processorsperbox” property or not) the number of allowed channels is zero.
- When Cerify is started with a perpetually licensed dongle and if the “cerify.processorsperbox” property is not set then the number of allowed channels is controlled by the dongle.
- When Cerify is started with any valid dongle and a valid number of channels is specified for the “cerify.processorsperbox” property, then this value would be used if it is less than or equal to the number of channels controlled by the dongle. If the value is greater than the number of channels controlled by the dongle then the number of channels controlled by the dongle takes precedence.
- When Cerify is started with any valid dongle and the number of channels specified for the “cerify.processorsperbox” property is -1, then the number of allowed channels is controlled by the dongle
- When Cerify is started with a time-expired dongle and if the “cerify.processorsperbox” property is not set, then the number of allowed channels is set to 1

Install Apple QuickTime Player.

To process Apple ProRes files or to process files using the Generic QuickTime Video template or to process files using the JPEG 2000 Video template, you have to install QuickTime Player. You can download QuickTime player from the link http://www.apple.com/quicktime/download/ .

NOTE. *If QuickTime Player is already installed, make sure that it is version 7.5.5 or later.*

Software Uninstallation

Before uninstallation, ensure that you have administrator privileges. If you try to uninstall Cerify without administrator privileges, the uninstallation process will be aborted.

Cerify can be uninstalled in two ways:

- Through **Start** > **Control Panel** > **Add or Remove Programs**.
- By rerunning the **CerifySetup<version>.exe** that you used to install the current version and following the on-screen instructions.

NOTE. *If the Cerify installer version is higher than the currently installed version, the installation will be upgraded to the newer version.*

If the Cerify installer version is lower than the current installed version, the installer will abort without taking any action.

NOTE. *The Cerify installation process places the WinPCap and HASP utilities in the* ***Add or Remove Programs*** *list. The uninstallation process does not remove WinPCap in case it is being used by other programs or you want to continue to use it for other purposes. The HASP drivers are uninstalled. If you want to uninstall WinPCap, this can be done in the usual way from the* ***Add or Remove Programs*** *list.*

NOTE. *If you select the* ***Backup database*** *option during uninstallation, the current database will be backed up to* `C:\Documents and Settings\<username>\Cerify\CerifyBackup_<version>_<timestamp>`*. You are given the option to change the directory where you want to back up the database. All relevant configuration files will be backed up to* `C:\Documents and Settings\<username>\Cerify\CerifyConfig_<version>_<timestamp>`*. The "Backup database" option will not be available if you are uninstalling the Media Test Unit, as the Media Test Unit does not have its own database.*

NOTE. *If Cerify 6.0 is uninstalled using* ***Add or Remove Programs*** *option or using Cerify 6.0 installer, there will be no “backup” option. The Cerify database and configuration files will always be backed up at the location* `C:\Documents and Settings\<username>\Cerify\CerifyBackup`*. When Cerify 7.x is installed, the installer will change the directory name “CerifyBackup” to “CerifyBackup_6.0”.*

Software Reinstallation

To reinstall Cerify, you must uninstall Cerify, and then rerun the installer. Rerunning the installer that was used to install the current version of Cerify will cause Cerify to be uninstalled. It does not repair the existing installation.

Software Upgrade

To upgrade your existing version of Cerify to the latest version, run the setup file for the latest version of Cerify and follow the on-screen instructions.

NOTE. *Dongles used with previous versions of Cerify need to be reprogrammed to be used with version 7.2 or above. If an existing version of Cerify is being upgraded to version 7.2 or above, then it is recommended that users send in their c2v files to Tektronix to obtain a new corresponding v2c file before installing the upgrade. This will allow users to program the dongle with the new v2c file before using Cerify version 7.2 or above.*

It is possible to upgrade in any of the following ways:

- Standalone > Supervisor
- Standalone > Standalone
- Standalone > Media Test Unit
- Supervisor > Supervisor
- Supervisor > Standalone
- Supervisor > Media Test Unit
- Media Test Unit > Supervisor
- Media Test Unit > Standalone
- Media Test Unit > Media Test Unit

If you would like to back up the current database while you are upgrading from Supervisor or Standalone Cerify, choose the **Backup database** option during the upgrade process. The current database is backed up to the location `C:\Documents and Settings\<User name>\Cerify\CerifyConfig_<version>_<timestamp>` by default. You may change this location by choosing a different folder for backing up the files.

The upgrade process also backs up relevant configuration files from the current installation. These files are backed up to `C:\Documents and Settings\<User name>\Cerify\CerifyBackUp_<version>_<timestamp>`.

When you are upgrading to a Supervisor or standalone Cerify, the database is upgraded automatically after the installation. If the database upgrade fails, the installer will install Cerify with a clean database and inform you about the failure. The **Backup database** option will not be available while upgrading from Media Test Units, as they do not have their own database.

Reverting to the previous version of Cerify

In some circumstances, such as a failed software upgrade, you might want to revert to an older version of Cerify. To do this, follow these steps:

NOTE. *You should have a database backup and a copy of configuration files from the version you would like to revert to as a pre-condition.*

1. Uninstall the current version of Cerify. While uninstalling, back up the database by selecting the **Backup database** option.
2. Install the older version of Cerify.
3. Restore the database of older version using CerifyDatabase Utility tool. For help on how to use this tool, refer to Database Backup/Restore Utility (see page 196).

Network Settings

In most circumstances, the PC on which Cerify is installed requires only one network interface. There are two scenarios where it is necessary to have two network interfaces. The first is when the network on which the Web clients will access the Web user interface needs to be physically separate from the network that stores the media file assets. The second scenario is when the Cerify system is to access media files from a Grass Valley Profile or K2 server. In this case, the additional network interface should be connected to the control network that runs the Grass Valley AMP service. This enables Cerify to list the contents available on the Grass Valley servers. The first network interface on the PC should continue to be connected to the video server network as follows:

- On a standalone Profile XP, to either the Media Ethernet card, if present, or the Ethernet interface of a Universal Interface Module (UIM), if present
- On a SAN-based Profile XP network, to the Gigabit Media network provided by a Universal Interface Module, if present
- On a SAN-based K2 network or a standalone K2 Media Client, to the Media/FTP network

For a K2, it is possible to use direct FTP connectivity, in the same fashion as other video servers. In this case, the AMP control network does not need to be accessed and no additional network interface is needed.

Accessing the Application

Starting the Application

Before accessing the Web user interface, it is necessary to start the application. The Cerify application is typically left running for long periods, even when there are no active users, because new jobs or files might need to be processed due to the use of drop boxes or CeriTalk.

To start the application, click the **Start Cerify** icon. Alternatively, the application may be started from the Windows Start menu.

NOTE. *Cerify will fail to start if any other Web services using port 80 are running on the system where Cerify is installed. You can run Cerify once you shut down other Web services running on port 80 on the system.*

The startup time of the Cerify application can be up to 3 minutes. The application has started and is ready to use when you see a Cerify login page in your Web browser.

To run Cerify, the user should have administrator rights.

You can change the port number used by Cerify by updating the Cerify system property "cerify.http.port". See Configuring the Cerify Application (see page 195) for details on how to update Cerify system properties.

NOTE. *On start up, Cerify reads this port number from "cerify.properties" and checks to ensure that this port is not used by any other application. If it finds the port number specified to be in use, an error message detailing the failure is displayed and startup operation is aborted. If the system cannot find any value set to this system property, it will use the default port number 80.*

Once the application has started, you can access the Cerify Web user interface from any computer on the same network. You can access the Web user interface using the URL `http://<Cerify IP Address>:<http port>` where `<http port>` is the value set for the property cerify.http.port.

Cerify Windows Service

Installation

1. Stop Cerify if it is running by right clicking on the Cerify system tray icon and clicking on **Stop Cerify**.
2. Install the Cerify Windows service by running the following command from the Cerify installation directory: CerifyService.bat install.
3. This will install and start Cerify as a service. You can see the new service called **Cerify** in the Windows Services utility. To access the utility, select **Control Panel > Administrative Tools > Services**.

After Cerify is running as a service, you can control the service by running the following commands from the Cerify installation directory:

- To stop the Cerify service, run CerifyService.bat stop.
- To start the Cerify service, run CerifyService.bat start.
- To uninstall the Cerify service, run CerifyService.bat uninstall.

Alternatively, after you have installed the service, you can control the Cerify service using the Windows Services utility.

Limitations

1. To install and control the service on Windows Vista, Windows 7, and Windows server 2008, you will need to login as a user Administrator. If you login as a different user with administrative privileges, you will have to do the following:
   a. Open Windows explorer and navigate to `C:\WINDOWS\system32`.
   b. Right-click on cmd.exe and select **Run as administrator**.
   c. In the resulting command window, change directory to the Cerify installation directory.
   d. Run the instructions given in the previous section for installing and controlling the Cerify service.
2. If a MediaLocation is configured with a mapped network drive, then Cerify cannot access the files in this MediaLocation until the user is logged into the system.

Starting a Cluster

Perform the following steps to start a Cluster:

1. Start Cerify on Supervisor unit by clicking **Start** > **All Programs** > **Tektronix** > **Cerify** > **Start Cerify**.
2. Start Cerify on Media Test Units by clicking **Start** > **All Programs** > **Tektronix** >**Cerify Media Test Unit** > **Start Cerify**.
3. Enter the URL http:// <Cerify host name> into your Web browser where Cerify host name is the Supervisor host name.

Accessing the Web User Interface

To access the application, you will need a Web browser installed on your computer.

To access the Web user interface from a remote computer, you need to know the IP address of the PC on which Cerify is installed in Standalone or Supervisor mode.

- Enter the URL `http://<Cerify IP address>` into your Web browser where "Cerify IP address" is the IP address of the system, where Cerify is installed in Standalone or Supervisor mode.

NOTE. *For cluster configuration, Tektronix recommends that both the Supervisor and Media Test Units are configured with a static IP Address.*

- To access the Web user interface in a more convenient fashion on the PC on which Cerify is installed, click **Start** > **All Programs** > **Tektronix** > **Cerify** > **Launch Cerify Web UI**. This will automatically launch your default Web browser and take you to the correct Cerify Web page. Alternatively, you can do this by right clicking on the Cerify system tray icon and selecting **Launch Cerify Web UI**.

NOTE. *To access the Web user interface on a Media Test Unit, click **Start** > **All Programs** > **Tektronix** > **Cerify Media Test Unit** >**Launch Cerify Web UI**.*

Logging in to the Application

When you access the Cerify Web page, you are presented with the Cerify application login screen.

1. Enter your Username and Password in the login page. Once these credentials have been correctly supplied, the Cerify Web browser will display the top level *Jobs page* (see page 29).
2. Use your mouse and keyboard to navigate this Web interface and enter information in the usual way.

NOTE. *The default user name is "admin" and password is "admin".*

NOTE. *If the user name and password are invalid, an error message appears, and you will remain on the login page. There is no limit to the number of times you can attempt to log in. User names are case sensitive, so if you have trouble logging in, check the Caps Lock key. If you forget your password, contact the Cerify administrator.*

⚠ ***CAUTION.*** *If a session is inactive for a period, you will automatically be logged out. Any attempt to resume the session will redirect you to the login page.*

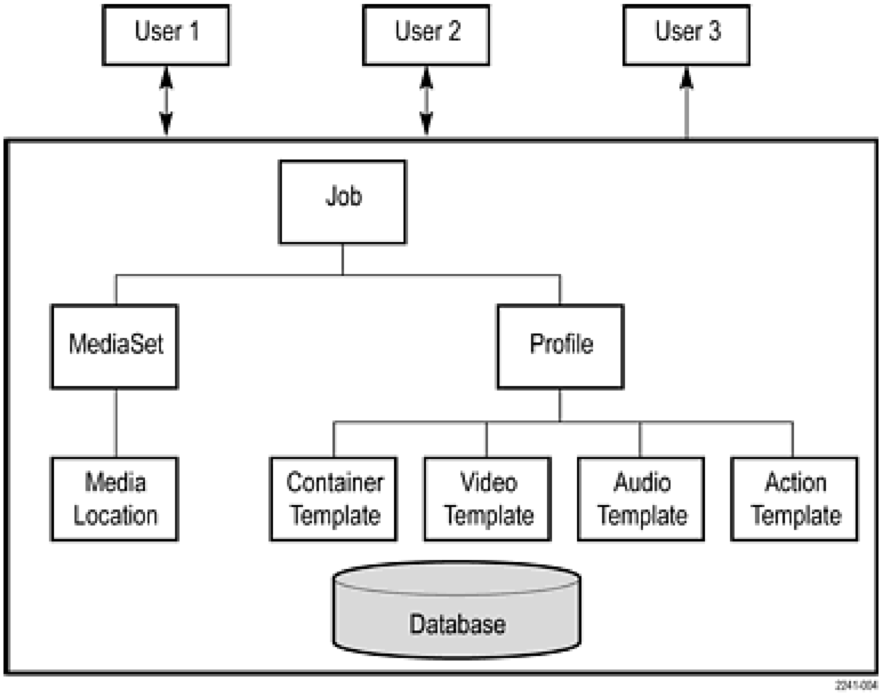
Logging Out

Click the text that reads **Log out** in the page header to log out of the application. This returns you to the login page.

Concepts

This section introduces the central concepts and entities used within the system. These entities and their relationships are shown in the following figure.

NOTE. *The following figure indicates the basic relationships between the entities. For simplicity, the figure shows one of each type of entity. In practice, there can be many instances of each type of entity, with each child entity potentially being used by multiple parent entities.*



Entities

Users

Before using the system, you must log in with your username and password credentials. These credentials will have been assigned by a user who has administrator access.

By default, the system is installed with a single predefined user whose name and password are both set to **admin**. This user has administrator access. It is recommended that this password is changed the first time the administrator logs into the system. Administrator access rights allow a user to modify system properties, and in particular to create and modify *MediaLocations* (see page 28) and Users.

You can find more information about users in the Modify User (see page 112) and New User (see page 112) sections.

MediaLocations

A MediaLocation is a local or network file storage location from which the system can access media files. Typically, this would be a directory on the hard drive or a video server that provides FTP or Windows file share access. To create a MediaLocation, a user must supply its URL and the username and password required to access this URL. In addition, you must supply a unique name to be used within the system to identify the MediaLocation.

Only users with administrator access are able to create or modify MediaLocations.

Refer to *Admin Page* (see page 111) and *MediaLocation Management* (see page 113) for more information.

MediaSets

A MediaSet is a collection of media files that you want to check.

A MediaSet can be a DropBox. A DropBox is a directory that is continually monitored for new media files. A MediaSet that is not a DropBox is simply a static collection of media files manually selected from one or more of the MediaLocations.

If a Job is associated with a DropBox, every file that appears in the DropBox over time will be processed.

For additional information, refer to MediaSets (see page 104).

Templates

To check a media file, you must define which checks should be applied when the file is tested. A Template is a collection of such checks chosen to perform specific tests that you require. The four types of Templates are:

- Container Templates, which apply to the transport/container layer of a media file
- Video Templates, which apply to the digital video content of a media file
- Audio Templates, which apply to the digital audio content of a media file
- Action Templates, which specify actions to be performed as a result of processing a media file

You can create multiple Templates of the same type for different purposes. For example, you might create a "Movies" Template, which contains a set of rules appropriate for HD MPEG-2 content, and an "on-line content" Template, which contains a set of rules appropriate for lower resolution H.264/AVC content.

For additional information, refer to Templates (see page 65).

Profiles

A Profile gathers together a container, video, audio, and action Template, providing a complete set of checks that can be applied when you want to test one or more media files. Any of the component Templates can be omitted, depending on your requirements. For example, it makes no sense to apply any container or audio checks to a media file that consists solely of a video elementary stream.

You can define multiple Profiles for different purposes. Following on from the previous example, you might create an "on-line content" Profile, which specifies a QuickTime Mov file wrapper in the container Template, H.264/AVC checks for the video Template, and AAC checks for the audio Template.

For additional information, refer to Profiles (see page 62).

Jobs

A Job is the term given to an individual testing process that can be run by the system. Each Job can process multiple media files or a single media file, depending on the requirements of the user. The set of files processed by a Job is defined by its MediaSet.

By creating a Job, you request the checks defined by a particular Profile be applied to the files in a particular MediaSet. In addition, you must specify the name and priority of the Job. The system can queue multiple Jobs to be run, whereby each Job is scheduled to be processed according to its priority.

The system processes one media file at a time.

How long it takes to process a Job depends upon a number of factors:

- The resolution of the video being processed (the larger the picture, the slower the processing)
- The video standard concerned (some standards, such as H.264/AVC, take more time to process)
- The number of tests selected (performing all the video quality checks can be processor intensive, because it requires the analysis of every pixel in each frame of video)
- The bit rate (in general, the higher the bit rate, the slower the processing)
- Hardware performance of the PC on which Cerify is installed

For additional information, refer to Jobs (see page 53).

Alerts

Alerts announce any checks that fail as a Job executes. Each alert indicates the severity of the failure, as well as where and why the check failed. The system gathers alerts associated with a particular Job, so that you can access the results from the top level and easily navigate to the details, such as which individual frames have Alerts.

The system organizes and summarizes any alerts raised against a particular Job, so that, at the top level, a single **processing result** status can be assigned to the Job. To view more detailed information, you can drill down through the interface, revealing (for example) which individual frames have raised alerts.

For additional information, refer to Alert Details (see page 59).

Reports

Reports provide you with a way to query the system database and obtain information in a predefined format. A Job report presents the results of a particular Job in tabular form.

For additional information, refer to Reports (see page 110).

Archiving

The system allows you to archive entities that are no longer required. MediaSets, Templates, Profiles, and Jobs can all be archived.

When an entity is archived, it remains present in the database, and can be recovered if necessary. Archived entities are inactive and usually hidden from view. Inactive entities cannot be used to construct new entities. So, for example, if a Job is archived before completion, it will not process any pending media files.

For additional information, refer to Active/Archive View Control (see page 34) and Archive/Restore Control (see page 34).

Clustering

To increase processing throughput, units can be clustered. Each cluster consists of a single Supervisor unit and one or more Media Test Units.

In a clustered configuration, the Supervisor unit hosts the database and the Web server. The Supervisor unit communicates with the rest of the local network, accessing media files and serving the Web user interface. The Media Test Units are allocated media files to process by the Supervisor unit. The results of this processing are stored by the Supervisor unit into a single database.

Functional Overview

This section gives an overview of the Cerify user interface.

System Tray Icon

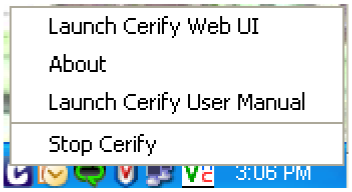
The Cerify system tray icon appears in the system tray, near the clock, once the application is started. The system tray icon provides menu items that allows easy control of the application.

Cerify system tray icon

- Left-click the icon to launch the default Web browser and load the Cerify page showing the list of jobs in it.
- Right-click the icon to bring up the system tray icon menu, which provides four options:
  - Launch Cerify Web UI, which launches the default Web browser and loads the Cerify page showing the list of jobs in it.
  - About, which shows the About Box of the application. The About Box displays product details such as product name, version and copyright information. The About Box can be closed by simply clicking on it.
  - Stop Cerify, which stops all job processing and shuts down the application completely. The application takes about 2 to 3 minutes to shut down completely. Note that shutting down the Web browser when using the Web user interface does not stop Cerify or stop any jobs running.

⚠ **CAUTION.** *Do not stop the application or its component services using the Microsoft Windows Task Manager. Always use the system tray menu for shutting down the application.*

  - Launch Cerify User manual, which launches the user manual PDF.



Cerify system tray menu

Web User Interface

The user interface consists of a structured collection of various types of pages accessed using a Web browser. The pages contain a page header, page body, and footer. The pages can contain the following elements:

- Icons (see page 32)
- Navigation bar (see page 33)
- Login Details and AutoRefresh links (see page 33)
- Trail widget (see page 34)
- Active/archive view control (see page 34)
- Archive/restore control (see page 34)
- Tables (see page 35)
- Footer (see page 36)

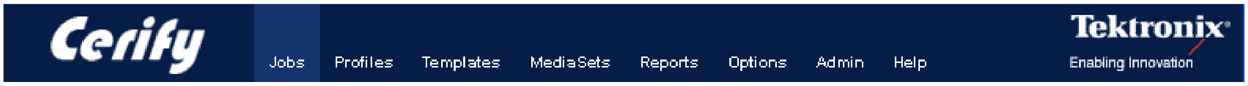
Icons

The following table lists the icons used in the interface.

Icon	Description
⇈	Collapse this section
⇊	Expand this section
⎘	Copy this item
✗	Remove this item
✎	Edit this item
📁	Directory
🗎	File in a directory
ℹ	Obtain context sensitive help
⌛	Status unknown
STOP	Failed with fatal error status
✖	Failed with error status
⚠	Failed with warning status
✓	Succeeded with no errors or warnings
👤	Item created through the Cerify Web user interface
🖥	Item created through CeriTalk API
▼	Sort items in this column in descending order
▲	Sort items in this column in ascending order
Go	Press this button to trigger the selected action
+	Add another set of values to the rules
−	Removes any set of values from the rule

Page Header

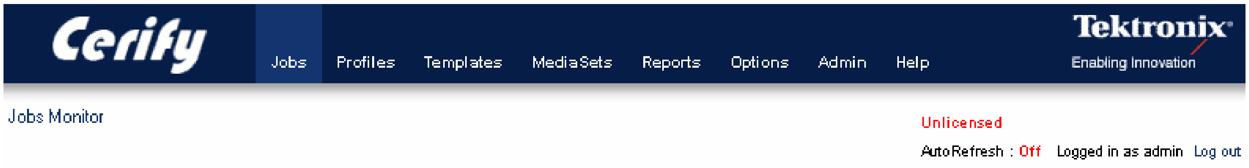
Navigation Bar. The navigation bar provides a quick route to the top level of any of the pages. The selected button on this header indicates which top-level page is selected. In the following example, the Jobs page (see page 53) is selected.



Navigation bar

Login Details and AutoRefresh links.

The login details, located below the navigation bar at the top-right section of the screen, show who you are logged in as and provide a link enabling you to log out.



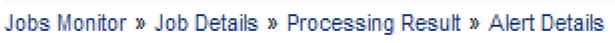
Unlicensed

AutoRefresh : Off Logged in as admin Log out

The license status of Cerify is also reported in this section. The license information can be one of the following:

License status	Details
Licensed	Cerify is fully licensed. Jobs can be processed.
Licensed - # day(s) remaining	Cerify is licensed for the next # number of days and Jobs can be processed.
Licensed - expires today	Cerify is licensed for today and Jobs can be processed.
License expired	The license for Cerify has expired. The Web interface may be used but no new Jobs can be started and Jobs in progress will stop.
Unlicensed	Cerify is unlicensed. This may be because a suitable dongle cannot be found. The Web interface may be used but no new Jobs can be started and Jobs in progress will stop. If Cerify cannot find a license when it starts up, Jobs will remain in the waiting state until a license can be found. An additional message will be displayed in the Jobs Monitor page, above the list of Jobs in this case. If Cerify finds a license when it starts up and later becomes unlicensed, Jobs will be processed, but will fail because no license is available.

Breadcrumb. The breadcrumb allows you to see your position in the hierarchy and to navigate from this position. For example, the following figure shows that you have navigated three levels down from the Jobs Monitor (see page 53) to view the Alert Details (see page 59) for a particular media file. The Jobs Monitor, Job Details, Processing Result, and Alert Details fields are all links that allow you to quickly step up one or more levels.

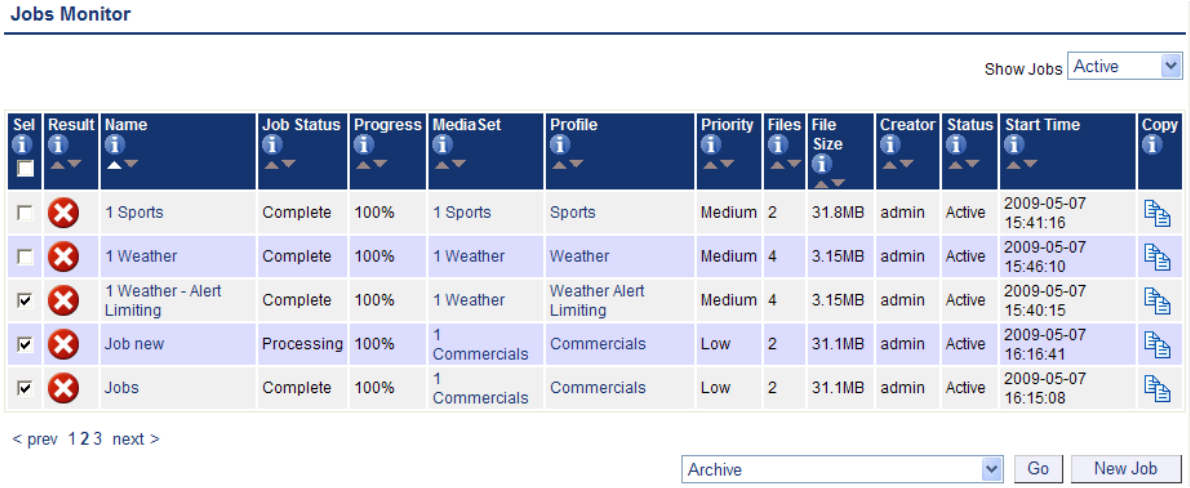


Jobs Monitor » Job Details » Processing Result » Alert Details

The breadcrumb

Page Body

The body of the page holds the buttons, forms, tables, and reports that are used to query and control the system.



Jobs Monitor

Show Jobs Active

Sel □	Result	Name	Job Status	Progress	MediaSet	Profile	Priority	Files	File Size	Creator	Status	Start Time	Copy
□	✖	1 Sports	Complete	100%	1 Sports	Sports	Medium	2	31.8MB	admin	Active	2009-05-07 15:41:16	
□	✖	1 Weather	Complete	100%	1 Weather	Weather	Medium	4	3.15MB	admin	Active	2009-05-07 15:46:10	
☑	✖	1 Weather - Alert Limiting	Complete	100%	1 Weather	Weather Alert Limiting	Medium	4	3.15MB	admin	Active	2009-05-07 15:40:15	
☑	✖	Job new	Processing	100%	1 Commercials	Commercials	Low	2	31.1MB	admin	Active	2009-05-07 16:16:41	
☑	✖	Jobs	Complete	100%	1 Commercials	Commercials	Low	2	31.1MB	admin	Active	2009-05-07 16:15:08	

< prev 1 2 3 next >

Archive Go New Job

The Jobs Monitor page body

Active/Archive View Control. Jobs (see page 53), Profiles (see page 62), Templates (see page 65) and MediaSets (see page 104) can all be archived. The Active/Archive view control allows you to choose which entities of a particular type to view. Using this control, you can view Active, Archived, or All entities of a given type. For example, the preceding figure shows a page of Active Jobs.

NOTE. *When an entity is archived, it is not removed from the database, but it becomes inactive. Inactive entities cannot be used to construct new entities.*

For example, a new Job (see page 53) can only be constructed from active MediaSets (see page 104) and active Profiles (see page 62).

Archive/Restore Control. The Archive/Restore control allows you to archive and restore entities. This control appears below the tables of items on the Jobs Monitor (see page 53) page for example.

To archive entities, select the corresponding check boxes in the left column of the table, and then click the **Go** button on the Archive/Restore Control. The preceding figure shows a user ready to archive three Jobs.

To restore entities from archive, set the Active/Archive View Control (see page 34) to **All** or **Archived**, which allows you to select archived objects. After selecting the items that you would like to restore, set the Archive/Restore Control to **Restore from archive**, and then click the **Go** button on the Archive/Restore Control. You can also delete, stop, and resume entities. For more information, refer to Modifying Jobs (see page 55).

Select All Control. The Select All control is presented as a checkbox input associated with the **Sel** column header in entity tables in the Cerify Web user interface. This control can be used to select/deselect all items in the associated table before performing actions on them using the **Archive/Restore** control. This control is available on the tables that list Jobs (see page 53), Profiles (see page 62), Templates (see page 65) and MediaSets (see page 104).

Tables.

The system displays collections of entities in the form of tables. These tables share a number of common features.

- The leftmost column of the table allows you to select the item.
- The arrow icons ▲ and ▼ allow you to sort the table based on values in a particular column (for example, sort a table of Jobs based on their Start Time).
- The white arrow shows the currently active sort order.
- Sorting the table deselects all items.
- Clicking the help icon ℹ provides information on a particular column.

In the preceding figure, since you have selected to view a maximum number of five rows in a table and there are more than five active Jobs, table paging controls appear below the table. For information on changing the table display preferences, refer to the Options (see page 110) page.

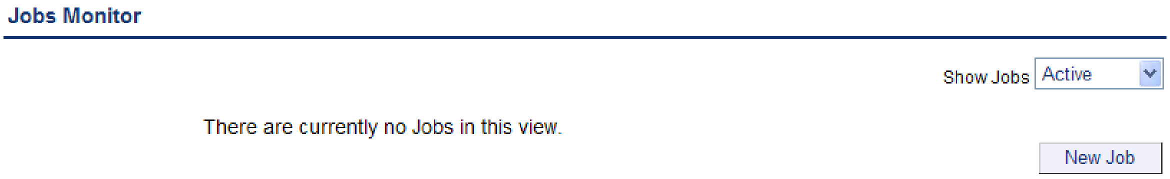
- The highlight indicates that page **1** is the current page.
- To select a different page, use the numbered links or the **prev** and **next** links.

The following table describes each column in the tables.

Column heading	Description
Channel	Shows if a Job or MediaSet was created by a user through the Web user interface 👤 or by an automation system through the CeriTalk API 🖥
Copy	Click the copy icon 📄 to copy an item and edit the copy
Creator	Shows which user created an item
Creation Time	Shows when this Job was created
Description	Shows the description of an item, as originally entered by the user
Edit	Click on the edit icon ✏ to edit an item

Column heading	Description
End Time	Shows when a Job or media file finished executing
Files	Shows the total number of files in a MediaSet
File Size	Shows the total size of all the files in a MediaSet. Note that Cerify uses "kB", "MB" and "GB" to represent 1024 bytes, 1048576 bytes, and 1073741824 bytes, respectively; a 1000 based system is not used.
Job Status	Shows the status of a Job (for example, Processing)
MediaSet	Shows the MediaSet name for this Job
Name	Shows the name of an item, as originally entered by the user
Priority	Shows a Job priority (for example, High)
Profile	Shows the Profile name for this Job
Progress	Shows the percentage progress of a Job
Result	Shows a Job processing result
Sel	Check the box in this column to select an item to be archived or restored
Start Time	Shows when a Job or media file started processing
Status	Shows the Active/Archive status of an item
DropBox	Indicates if a given MediaSet is a DropBox

Empty Tables. When you navigate to the Jobs page, if no Jobs (see page 53) have been created, or all Jobs are archived, the page body will appear as shown in the following figure.



There are currently no Jobs in this view.

No Jobs

Collapsing Headings. Some pages contain sections that can be expanded or collapsed to control how much information is displayed on the page. Click anywhere on a line containing the collapse icon ⏫ to hide information. Click on a line containing the expand icon ⏬ to view more information.

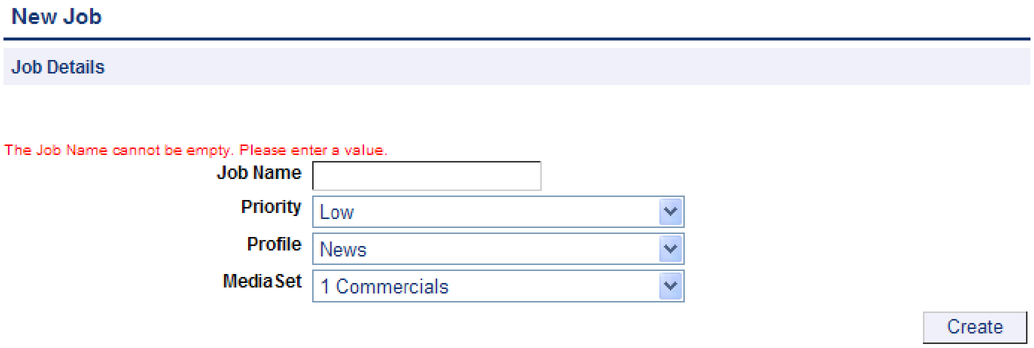
Footer

The footer displays a copyright notice and version information.

Error Handling

Form Input Errors

The system informs you if a mistake is made while filling an input form. For example, if you attempt to create a New Job (see page 54) without supplying any text in the Job Name field, the form will be redisplayed with an error message. The error message is in red text, next to the invalid field on the form as shown in the following figure.



New Job

Job Details

The Job Name cannot be empty. Please enter a value.

Job Name

Priority: Low

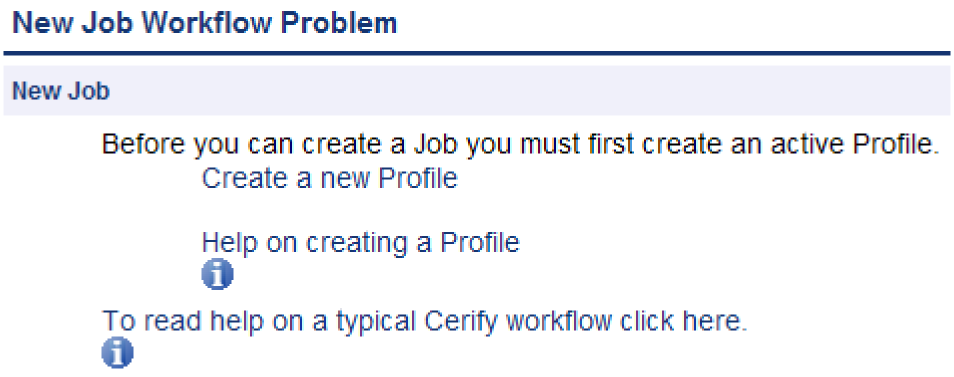
Profile: News

MediaSet: 1 Commercials

Input errors

Work Flow Errors

The system informs you if an attempt is made to perform an operation out of the correct sequence. For example, if you attempt to create a Job (see page 53) before a Profile (see page 62) or MediaSet (see page 104) has been created, an error page will appear, as shown in the following figure:



New Job Workflow Problem

New Job

Before you can create a Job you must first create an active Profile.
Create a new Profile

Help on creating a Profile

To read help on a typical Cerify workflow click here.

Work flow error page

Application Errors

Occasionally the application is unable to handle a request, in which case it will display the message: **An internal Cerify Error has occurred**. You should be able to continue using the application as normal after this. If the problem persists, contact your local Tektronix representative.

Tutorials

The following tutorials start from a clean installation and step through the process of creating a new Job and checking on its progress. To run these tutorials, you will need the following:

- Access to a computer with Cerify installed
- A Cerify user account with administrator privileges (see page 111)

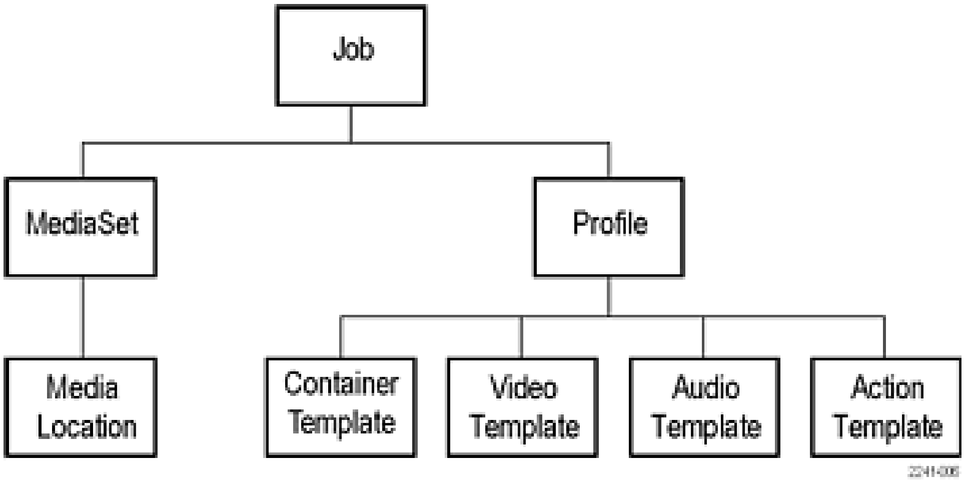
The tutorials are as follows:

- Before You Begin (see page 40): How to start using the system
- Creating a MediaLocation (see page 42): How to create a MediaLocation
- Creating a MediaSet (see page 43): How to create a MediaSet by selecting files from a MediaLocation
- Creating a Template (see page 46): How to create a Video Template
- Creating a Profile (see page 48): How to create a Profile from your Video Template
- Creating a Job (see page 49): How to create a Job from your Profile and MediaSet

- Inspecting Job Results (see page 49): How to review the progress of a Job and inspect the Job results
- Creating a Report (see page 50): How to create a printable report on the Job
- Archiving (see page 50): How to archive the MediaSet and the Job
- Exporting Templates (see page 51): How to export the Video Template
- Importing Templates (see page 51): How to import the Video Template previously exported

Work Flow

The following figure indicates the dependencies between the entities that make up a Job. It shows, for example, that a MediaSet requires a MediaLocation; any attempt to create a MediaSet when no MediaLocations exist will generate a Work Flow Error (see page 38). Similarly, it is a work flow error to attempt to create a Job when there are no active MediaSets or Profiles.



Entity relationships

Before You Begin

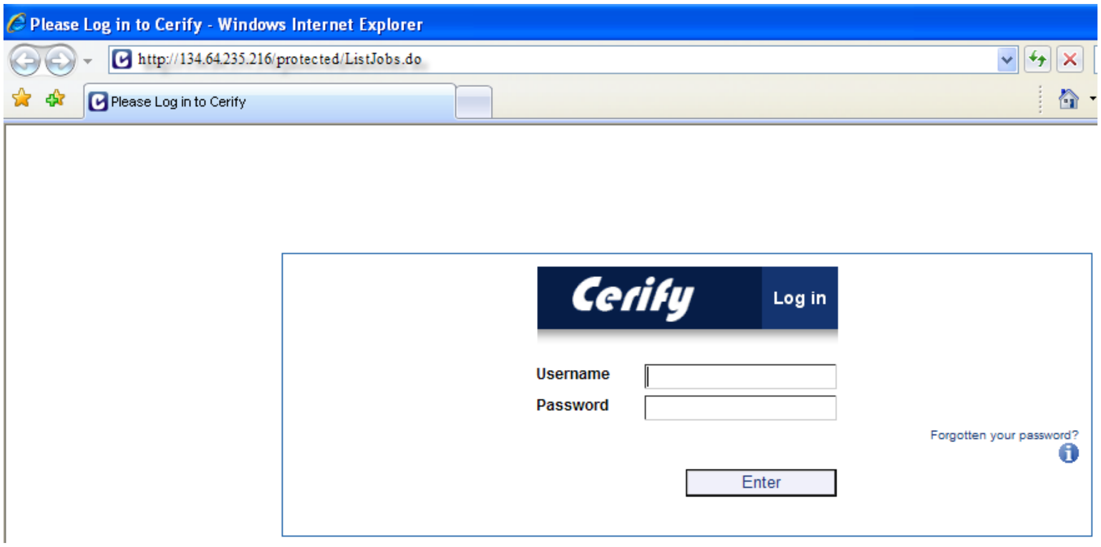
1. Start the Cerify application by clicking the **Start Cerify** icon on your desktop or by using the Start menu. For information about accessing the application, see Accessing the Application (see page 24).

NOTE. *To run this tutorial, you must log in with administrator access. Note that the system comes with a single user already set up as administrator. The Username and Password are both set to admin.*

If a session is inactive for a certain period of time, you will be logged out. If this happens during the tutorial, you will be redirected to the login page. Log back in to continue.

2. On successful start up, Cerify presents you the login page using your default browser. The following login page shows a user about to log in to the system at `http://134.64.235.216`.

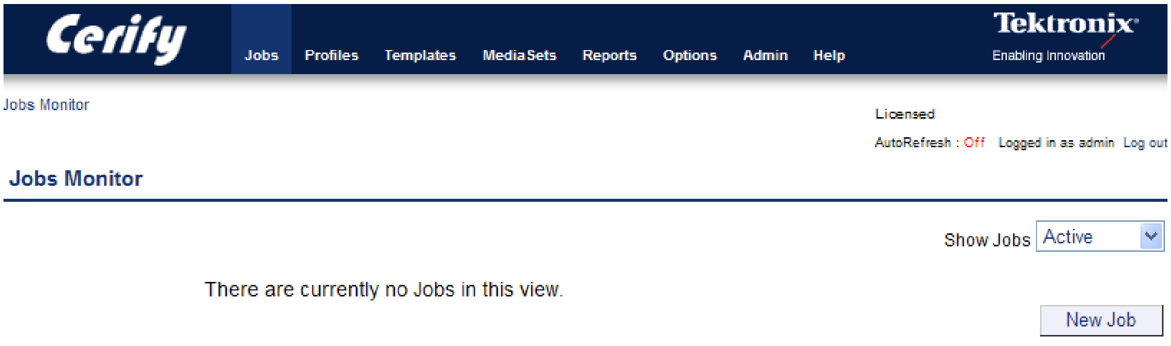
TIP. *On any Web page you can click the help icon* ℹ *(shown below on the right side of the login page) to obtain context-sensitive help.*



Please Log in to Cerify - Windows Internet Explorer
http://134.64.235.216/protected/ListJobs.do
Please Log in to Cerify
Cerify
Log in
Username
Password
Forgotten your password?
Enter

3. Enter your user name and password into the appropriate fields in the login page and click the **Enter** button. After you have logged in, you will be taken to the *Jobs Monitor* (see page 53).

The following figure shows what this page looks like when no Jobs are active, which will be the case if this tutorial is being run from a clean installation.



Jobs Monitor

There are currently no Jobs in this view.

Jobs Monitor page

The header contains the Navigation Bar (see page 33), which allows you to quickly navigate between the major areas of the user interface. In this case, the Jobs button is selected, indicating you are on one of the Jobs pages.

In addition, the header shows that you are logged in as **admin**.

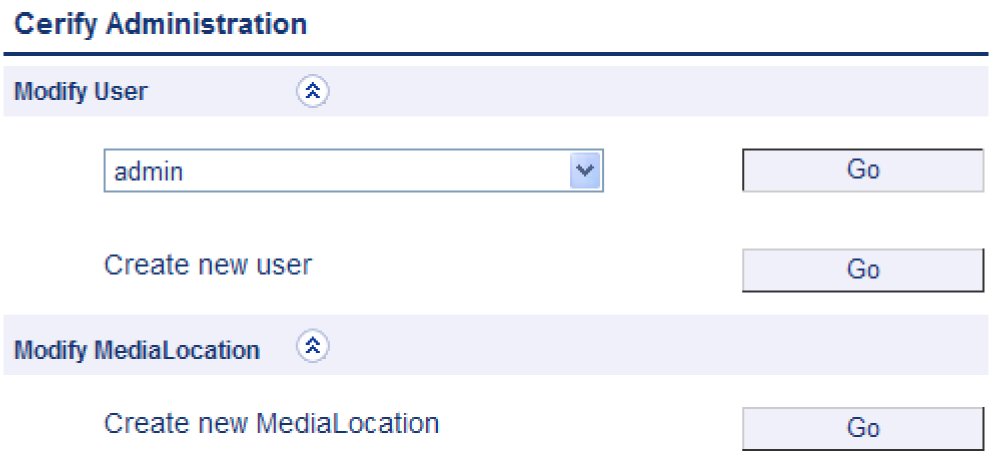
The body of the page contains:

- A line of text informing you that there are no Jobs in this view
- An Active/Archive View Control (see page 34), allowing you to view any archived Jobs (see page 29)
- A New Job button. Clicking this button will generate a workflow error, because you have not yet created a Profile and a MediaSet. For additional information, refer to Work Flow Errors (see page 38).

Creating a MediaLocation

A MediaLocation is a network location from which the system can access media files. Users with administrator access can create and modify MediaLocations (see page 28).

1. Click the **Admin** button on the Navigation Bar (see page 33) to access the Admin (see page 111) page, as shown in the following figure.

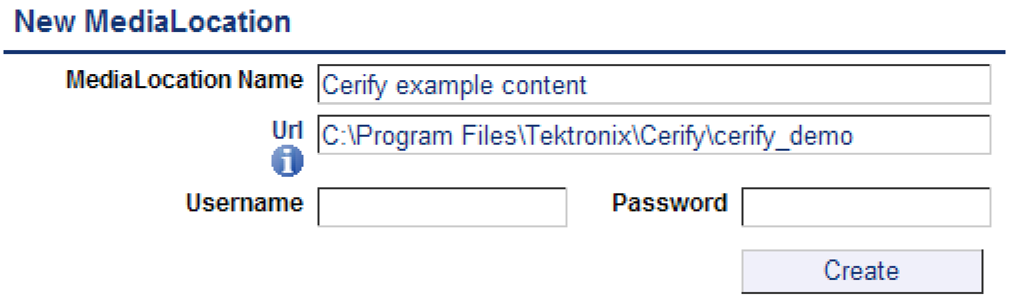


Creating a MediaLocation

2. Start creating a new MediaLocation by clicking the **Go** button next to the text that reads **Create new MediaLocation**. You should see a form.

3. Fill in the fields in the form as shown in the following table, and then click **Create** to create the MediaLocation.

Field	Value
MediaLocation Name	Cerify example content
URL	`c:\Program Files\Tektronix\Cerify\cerify_demo`
Username	-
Password	-



New MediaLocation

MediaLocation Name: Cerify example content

Url: C:\Program Files\Tektronix\Cerify\cerify_demo

Username:

Password:

New MediaLocation

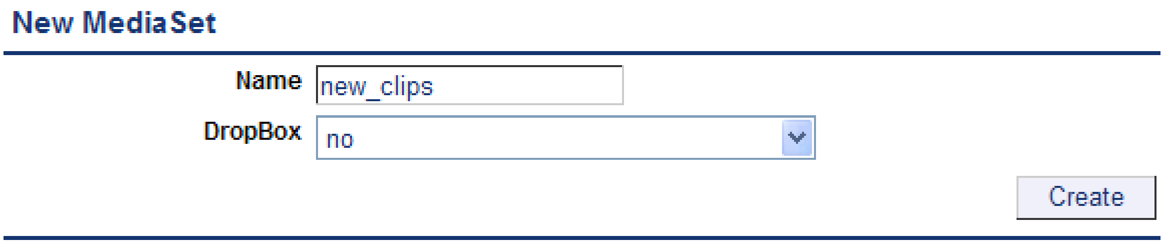
NOTE. *The system validates the MediaLocation details when you click the Create button, checking that the MediaLocation name is unique, the URL exists, and that the specified user can access files at that URL. If any of these checks fail, the MediaLocation will not be created; instead, the form will be posted back to the screen with an error message indicating what the problem is.*

For additional information on creating MediaLocations, refer to MediaLocation Management (see page 113)

Creating a MediaSet

Now that you have created a MediaLocation, you can create a MediaSet that collects together some of the files at this location.

1. Click the **MediaSets** button on the Navigation Bar (see page 33) to visit the MediaSets page.
2. Start creating a new MediaSet by clicking the **New MediaSet** button. You will see a page like the one shown in the following figure.



New MediaSet

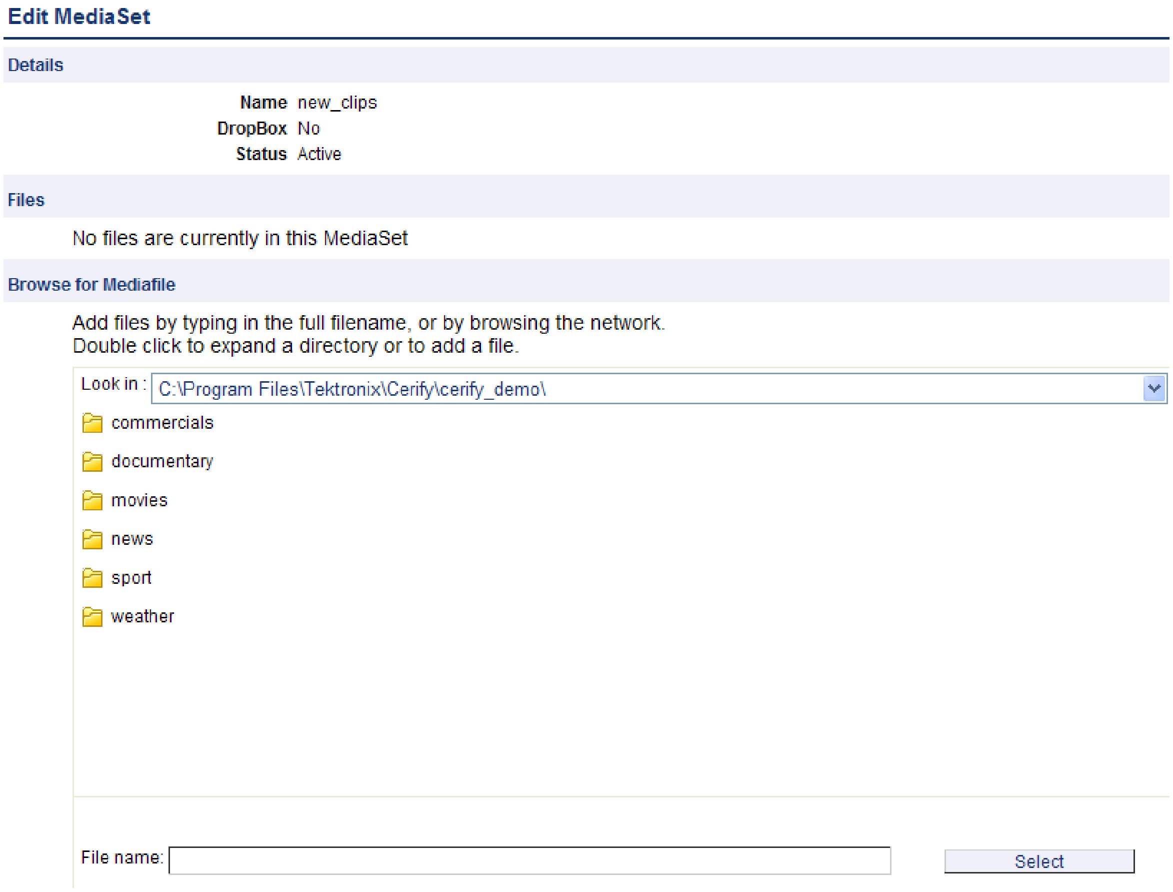
Name: new_clips

DropBox: no

New mediaset

3. Select **no** for the DropBox mode.

4. Enter a suitable name for the MediaSet and click **Create** to create the MediaSet and continue to the Edit MediaSet (see page 105), as shown in the following figure.



Edit MediaSet

Details

Name new_clips
DropBox No
Status Active

Files

No files are currently in this MediaSet

Browse for Mediafile

Add files by typing in the full filename, or by browsing the network.
Double click to expand a directory or to add a file.

Look in : C:\Program Files\Tektronix\Cerify\cerify_demo\

📁 commercials
📁 documentary
📁 movies
📁 news
📁 sport
📁 weather

File name:

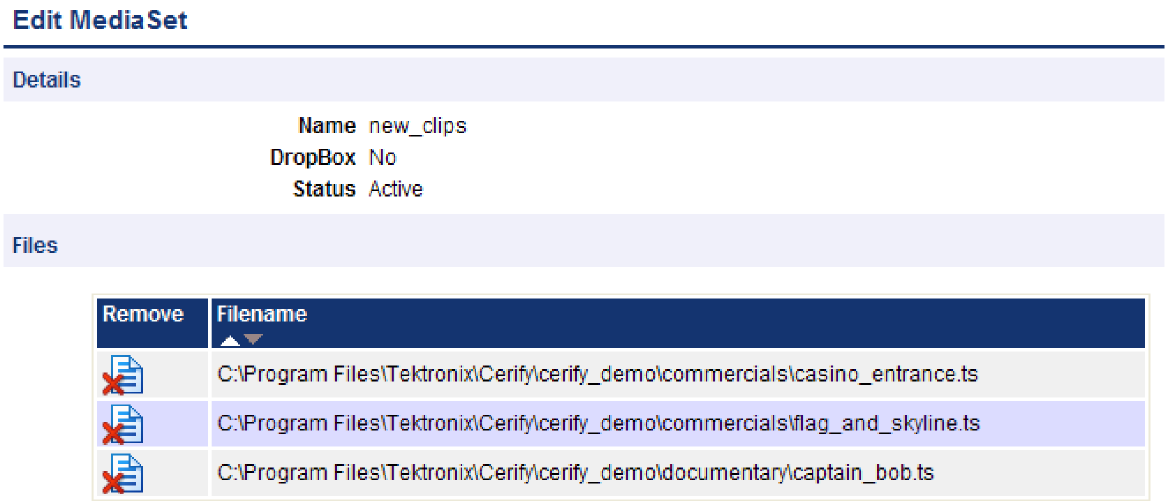
Edit MediaSet

The Edit MediaSet page provides details of the files already in the MediaSet (there should be none yet). It shows directories with a 📁 icon, and files with a 📄 icon. The page also provides the controls for you to add new files.

5. Add files to the MediaSet using the directory and file browser.

   - To reveal the contents of a directory, double-click the directory.
   - To close the directory and go up a level, open the drop-down menu control at the top right of the file browser to provide a selection of recent directories.
   - To select a file, double-click the 📄 file icon (it will appear in the Files table).

The following figure shows a MediaSet to which three files have been added.



Edit MediaSet

Details

Name new_clips

DropBox No

Status Active

Files

Remove	Filename
✗	C:\Program Files\Tektronix\Cerify\cerify_demo\commercials\casino_entrance.ts
✗	C:\Program Files\Tektronix\Cerify\cerify_demo\commercials\flag_and_skyline.ts
✗	C:\Program Files\Tektronix\Cerify\cerify_demo\documentary\captain_bob.ts

MediaSet containing files

6. You can also add a file to the MediaSet by entering the full path to the file in the **File name** text field at the bottom of the page.

This path must include the full URL of the file. For example, `c:\Program Files\Tektronix\Cerify\cerify_demo\news\airport_interview.ts`.

Creating a Template

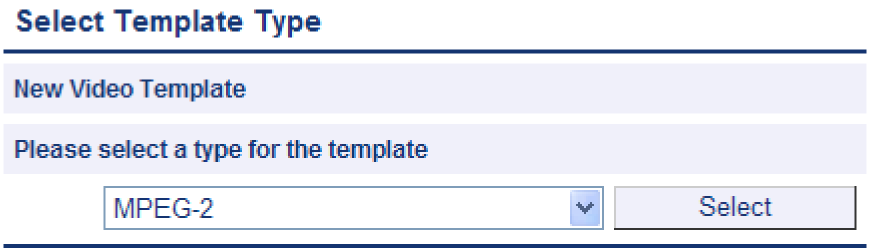
To test the files in your new MediaSet, you need to decide which checks to apply. Checks can be applied to the container or wrapper layer, the video stream, and the audio stream, using container, video, and audio Templates, respectively.

In addition, using an Action Template, you can define actions to take when files have been checked.

1. Click the **Templates** button on the Navigation Bar (see page 33) to start creating a Template. You will see a page listing the Templates that are present in your current Templates view.

Select Video Template Type

1. Click the **New Video Template** button to create a new Video Template. You will be prompted to select a Template type, as shown in the following figure.


Select Template Type

New Video Template

Please select a type for the template

MPEG-2

Select Template type

The Template type you choose depends on the type of video content you want to check. This type will be the Video Standard used when the video was encoded: for example, MPEG-2 or H.263.

2. Use the drop-down menu to select **MPEG-2**, and then click the **Select** button to take you to the New Video Template page. The **New Video Template** page is where you define which checks to include in your Video Template.

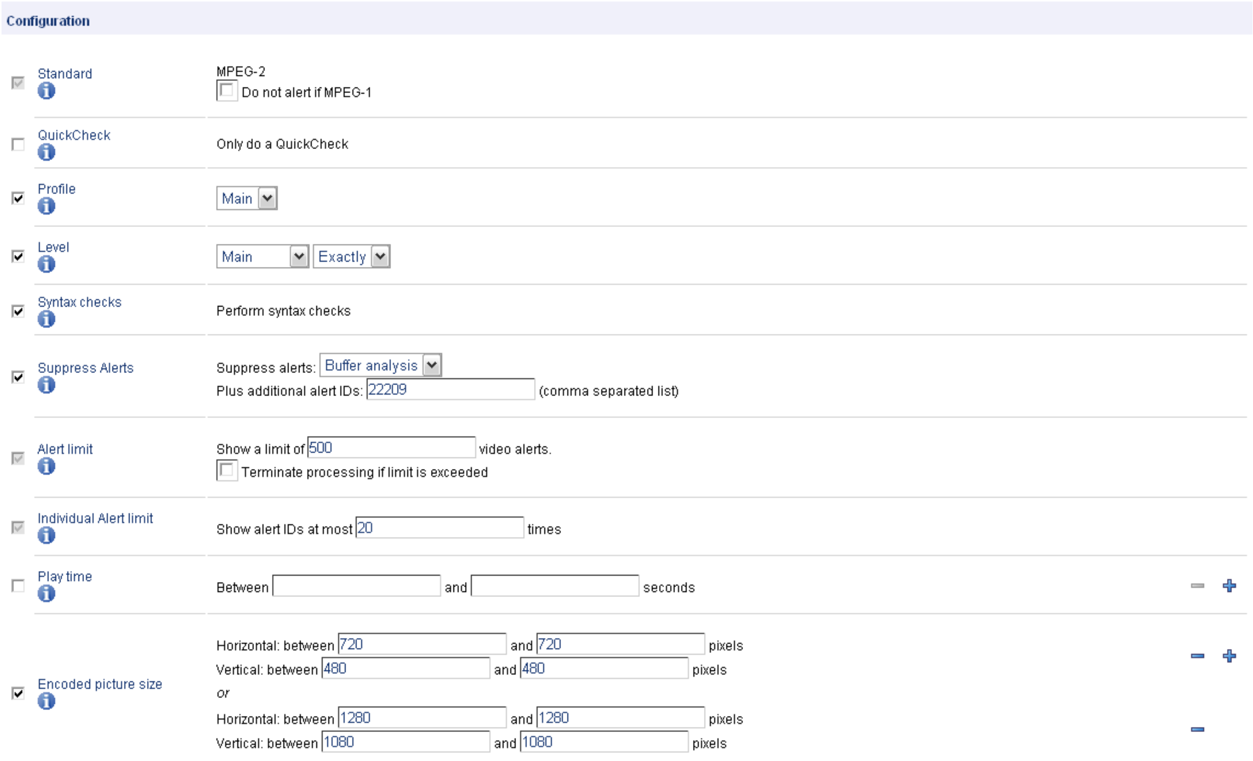
New Video Template

⚠ ***CAUTION.*** *The new Template will not be saved until you click the Create button at the bottom of the page. When you click **Create**, the system will check that the fields you have filled contain valid data, and prompt you to fix any problems. If there are no problems, the new Template will be created and stored in the database.*

1. Enter a name for the Template, “News Video”, and optionally a description.
2. Configure the checks to be applied by selecting the check boxes and entering values into the text fields. (See the following figure for a typical Video Template configuration.) Use the Add / Remove buttons to configure the Resolution rule with multiple sets of valid values (see page 71). For a full explanation of the checks performed by each rule, click on the ⓘ icon next to each rule name.
3. Click the **Create** button at the bottom of the page to create the new Video Template.

The following figure shows a typical MPEG-2 Video Template configuration. When this Template is used to check a video stream, it will check:

- The video is MPEG-2 encoded.
- The video is encoded using MPEG-2 Main Profile, Main Level.
- The video bit stream syntax conforms with the MPEG-2 Standard, but any alerts relating to Buffer analysis and alert number 22209 will be suppressed.
- A maximum of 500 alerts will be displayed.
- Each alert type will be displayed a maximum of 20 times.
- The video resolution is 720 by 480 pixels or 1280 by 1080 pixels.



Configuration

☑ Standard — MPEG-2
 □ Do not alert if MPEG-1

□ QuickCheck — Only do a QuickCheck

☑ Profile — Main

☑ Level — Main, Exactly

☑ Syntax checks — Perform syntax checks

☑ Suppress Alerts — Suppress alerts: Buffer analysis
 Plus additional alert IDs: 22209 (comma separated list)

☑ Alert limit — Show a limit of 500 video alerts.
 □ Terminate processing if limit is exceeded

☑ Individual Alert limit — Show alert IDs at most 20 times

□ Play time — Between [ ] and [ ] seconds

☑ Encoded picture size —
Horizontal: between 720 and 720 pixels
Vertical: between 480 and 480 pixels
or
Horizontal: between 1280 and 1280 pixels
Vertical: between 1080 and 1080 pixels

Video Template configuration

For additional information, refer to Video Templates (see page 76).

To create an Audio Template, the process is very similar as described in the following steps.

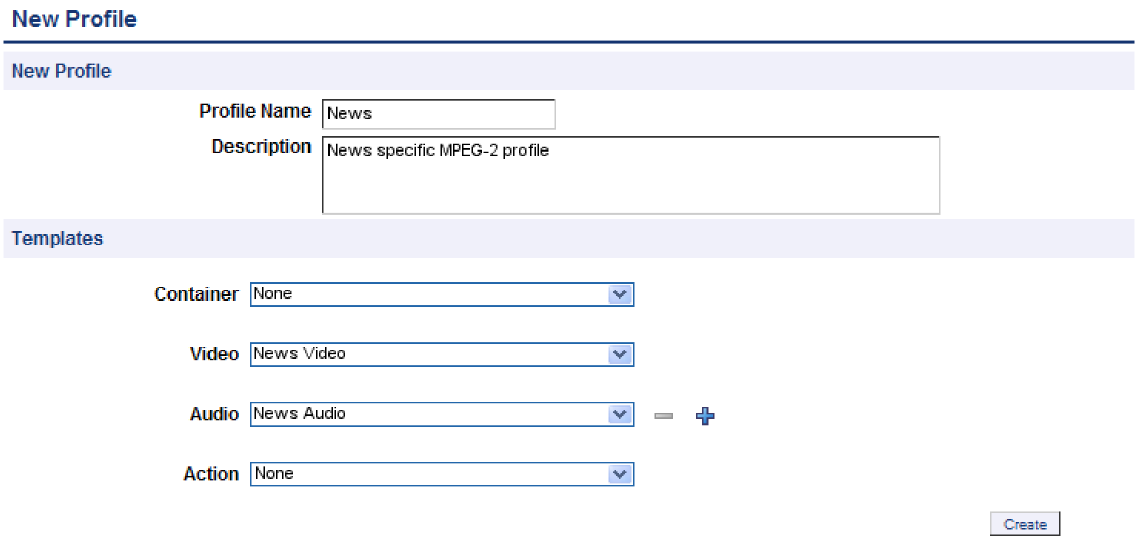
1. Return to the Templates page by clicking the **Templates** link on the navigation bar.
2. Click the **New Audio Template** button to create a new Audio Template. Select **MPEG-1 / MPEG-2 Audio** from the select box, and then click the **Select** button.
3. Enter the name "News Audio" for the Template, and optionally a description.
4. Configure the checks to be applied by selecting the check boxes and entering values into the text fields. The precise choice of rules and parameters does not matter for the purposes of this tutorial.
5. Click the **Create** button at the bottom of the page to create the new Audio Template.

Create a Container Template using the same steps. When prompted to select the Template type, choose **MPEG-2 Transport Stream**; otherwise follow the same steps as for the other Templates. The precise choice of rules and parameters does not matter for the purposes of this tutorial.

Creating a Profile

To use your new template in a Job, you must include it in a Profile.

1. Click the **Profiles** button on the Navigation Bar (see page 33) to go to the top-level Profiles page.
2. Click the **New Profile** button.
3. Enter a name and optionally a description for the Profile, as shown in the following figure.
4. Select the Container Template, Audio Template, and Video Template you just created. If you created more than one audio template, click the Plus icon to display another audio template selection field.
5. Click the **Create** button to create a Profile.



New Profile

New Profile

Profile Name: News

Description: News specific MPEG-2 profile

Templates

Container: None

Video: News Video

Audio: News Audio

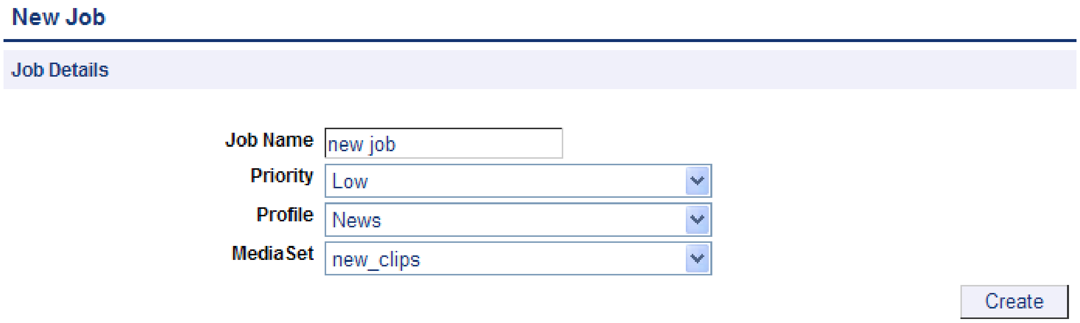
Action: None

For additional information, refer to *Profiles* (see page 62).

Creating a Job

Having created a MediaSet and a Profile, you can now create a Job.

1. Click the **Jobs** button on the Navigation Bar (see page 33) to go to the top-level Jobs page.
2. Click the **New Job** button.
3. Enter a name for the Job. Set the Job priority to "Low", and select the Profile and MediaSet that you previously created.
4. Click **Create** to create the Job.



New Job

Job Details

Job Name: new job

Priority: Low

Profile: News

MediaSet: new_clips

Creating a Job

Inspecting Job Results

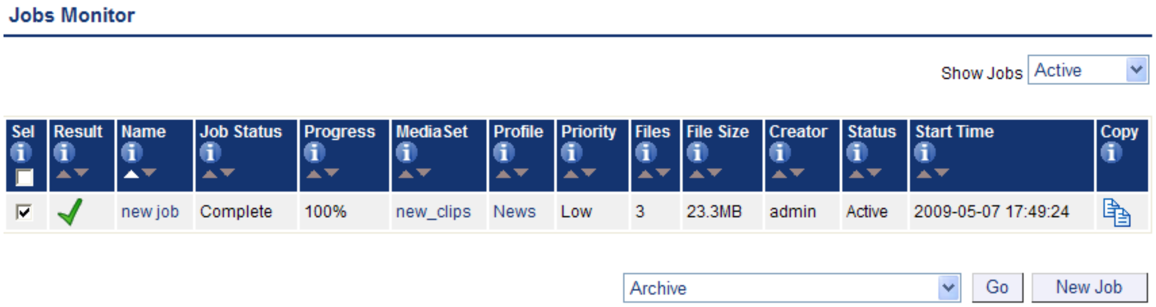
1. Access the Jobs Monitor page by clicking the **Jobs** button on the Navigation Bar (see page 33). This page gives feedback on the status of all running Jobs (unless the Job view has been set to **Archived**). This feedback includes:
   - A processing result summary for each Job
   - Status and progress information for each Job
   - Summary information about the entities associated with each Job
   - Timing information for each Job
2. Click the **AutoRefresh** button in the page header to arrange for the page to refresh periodically with no further intervention. This is useful when you are monitoring the progress of a large Job that might take several minutes to complete.
3. Wait for the Job Status to show complete before continuing with this tutorial. This may take several minutes.
4. From the Jobs Monitor, you can drill down for more details about a Job result. For additional information on Inspecting Job Results, refer to Job Details (see page 56), Processing Result (see page 57) and *Alert Details* (see page 59).

Generating a Report

1. Access the Reports page by clicking the **Reports** button on the Navigation Bar (see page 33). This page allows you to generate Job processing reports.
2. In the **Enter Jobname** field, enter the name of the job that you created.
3. Click the **Generate** button to generate a report on your Job. For detailed description, refer to *Reports* (see page 110).

Archiving

1. To archive your Job (refer to Archiving (see page 30)), go to the Jobs Monitor page by clicking the **Jobs** button on the Navigation Bar (see page 33).
   a. Select the Job to archive by selecting the checkbox in the left column of the Jobs Monitor table.
   b. Make sure that the action drop-down menu under the table reads **Archive**, and then click **Go** to archive the Job.



Jobs Monitor

Show Jobs: Active

Sel	Result	Name	Job Status	Progress	MediaSet	Profile	Priority	Files	File Size	Creator	Status	Start Time	Copy
☑	✓	new job	Complete	100%	new_clips	News	Low	3	23.3MB	admin	Active	2009-05-07 17:49:24	

Archive

Archiving a Job

2. To view archived Jobs, set the **Active/Archive view control** to **All** or **Archived**. The table will be updated to reflect your choice. You can restore archived Jobs from this new view, if required. MediaSets, Templates, Profiles, and Jobs can all be archived.

Exporting Templates

1. To export your Templates, go to the Templates page by clicking the **Templates** button on the Navigation Bar (see page 33).
2. Select the Templates to export by selecting the checkbox in the left column of the appropriate Template table.
3. Click on the **Export** button at the bottom of the page to export the selected Template.
4. When prompted, select a location to save the Templates file, and click **Save**. The file will be saved to the location you select.

Importing Templates

1. To import the XML Template file generated by Exporting Templates (see page 51), go to the Templates page by clicking the **Templates** button on the Navigation Bar (see page 33).
2. Click the **Browse** button at the bottom of the page to access the **Open File** dialog.
3. Navigate to the location where the file is, select it, and click **Open**.
4. Click on the **Import** button to import the selected file. A template with the same name will exist, select the option **If a template of the same name already exists, replace it**, and then import the template.
5. The Templates defined in the file will be successfully imported, and a success message will be displayed on the **Templates** page.

NOTE. *There is a range of example templates in the* `<installation directory>/Example Templates` *directory that may be useful to you. The example templates are preloaded onto Cerify and you can view them in the* ***Templates*** *page.*

Introduction

This chapter provides a reference guide for users. It is organized in much the same way as the user interface is organized, with sections for each main page and subsections for the subpages.

Jobs

A Job applies the various checks in a Profile (see page 62) against the media files in a MediaSet (see page 104).

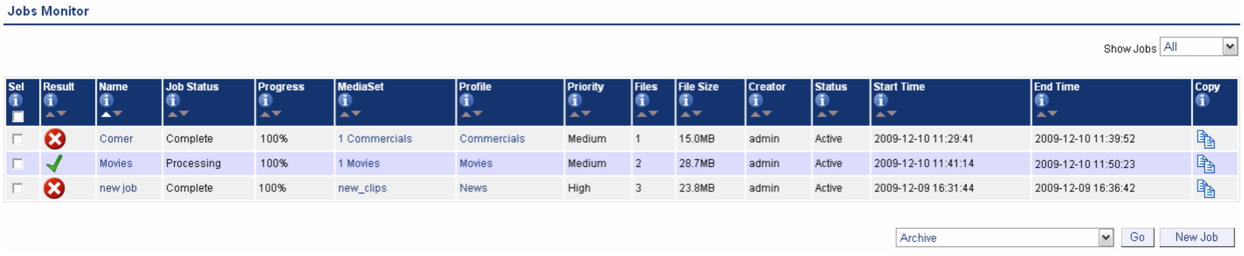
A Job is identified by its unique name. In addition, a Job is assigned a Priority upon creation.

The top-level Jobs page is accessed by selecting the Jobs button from the navigation bar. When you open this page, you will be presented with a Table (see page 35) displaying Jobs that are filtered according to the Archive/Restore Control (see page 34). If no Jobs match the current filter, an informative message will be displayed.

Jobs Monitor

The Jobs Monitor page provides a top-level view of the status of Jobs. The following figure shows the status of three Jobs. One Job is succeeded with no errors or warnings; the remaining two have raised errors.

NOTE. *In this example, the user has limited both how many rows and which columns of the Jobs Monitor are displayed.*



Jobs Monitor

Show Jobs All

Sel	Result	Name	Job Status	Progress	MediaSet	Profile	Priority	Files	File Size	Creator	Status	Start Time	End Time	Copy
□	✗	Comer	Complete	100%	1 Commercials	Commercials	Medium	1	15.0MB	admin	Active	2009-12-10 11:29:41	2009-12-10 11:39:52	
□	✓	Movies	Processing	100%	1 Movies	Movies	Medium	2	28.7MB	admin	Active	2009-12-10 11:41:14	2009-12-10 11:50:23	
□	✗	new job	Complete	100%	new_clips	News	High	3	23.8MB	admin	Active	2009-12-09 16:31:44	2009-12-09 16:36:42	

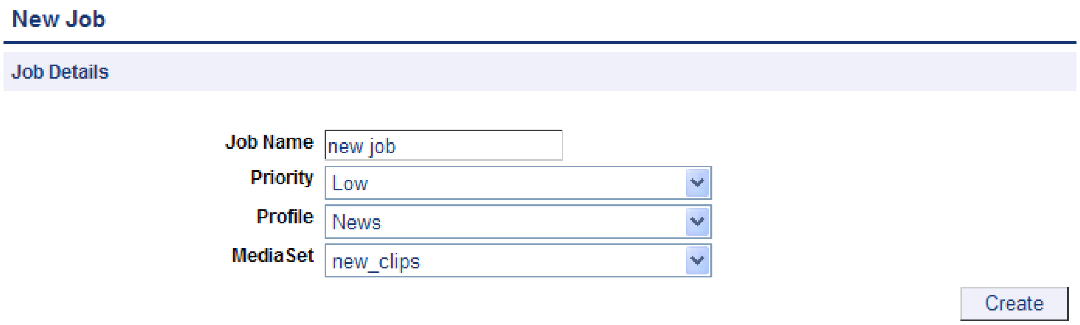
The Jobs Monitor page

From this page it is possible to:

- View Job Details (see page 56) for a Job by clicking on the Job name.
- View the details for the Job MediaSet (see page 104) and Profile (see page 62) by clicking on the MediaSet or Profile name.
- Create a New Job (see page 54) by clicking the **New Job** button.
- Create a New Job (see page 54) by clicking the copy icon.
- Modifying Jobs (see page 55) by clicking the jobs to be modified, selecting the required action from the **Archive/Restore** control and clicking the **Go** button.

New Job

The New Job page is accessed either by copying an existing *Job* (see page 53), or by creating a new Job.



New Job

Job Details

Job Name: new job

Priority: Low

Profile: News

MediaSet: new_clips

The New Job page

You should enter a **Job Name**, set the **Priority**, and choose a **Profile** and a **MediaSet**, before clicking the **Create** button to create the Job.

CAUTION. *Jobs cannot be created unless one or more MediaSets (see page 104) and Profiles (see page 62) are active. If this is not the case, then any attempt to create a Job will generate a Work Flow Error (see page 38).*

Modifying Jobs

It is possible to modify the state of existing Jobs in a number of ways, using the same *Archive/Restore control* (see page 34) that is described in the Archiving Tutorial (see page 50).

To modify a Job, do the following:

1. Select the Jobs you want to modify by selecting the checkbox in the left column of the Jobs Monitor table.
2. Select the desired action from the action drop-down menu under the table.
3. Click **Go** to carry out the action.

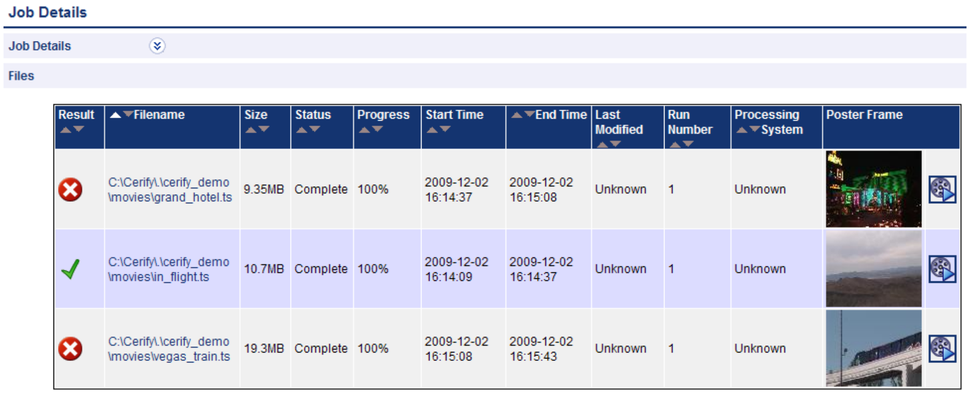
It is possible to select the following actions:

- **Archive**, **Restore from archive**. Used to remove from view or restore to view the selected Jobs. Note that archiving processing Jobs will automatically cause those Jobs to be immediately stopped. When the Job is removed from the archive, it will remain in the stopped state until the user chooses to resume the Job. This is to prevent unwanted processing of Jobs occurring when the Job was complete at the point of archive, but could restart processing when removed from the archive because the associated MediaSet has had new files placed in it.
- **Stop (finish current files)**, **Stop (immediately)**. Stop processing the Job. Results of media files that have already been completed will be retained and processing of unprocessed media files can be resumed when desired. The first option allows media files that are currently being processed to run to completion, whereas the second option will immediately terminate all processing. In the latter case, all results from the currently processing media files for that Job will be removed, and if the Job is resumed, processing will restart from the beginning of the media file.
- **Resume**. Resume the processing of a stopped Job. Any media files that have not yet been processed will begin processing.
- **Set priority to high**, **Set priority to medium**, **Set priority to low**. Change the priority of the selected Jobs to the new priority. This will affect waiting Jobs and the priority which are assigned to unprocessed media files in currently processing Jobs. Changing Job priorities never causes a currently running media test process to be stopped.
- **Delete**. Delete the selected Jobs from the database. All the results associated with that Job, including stream information, alert details and thumbnails, will be permanently deleted. Use the archive functionality if you want to remove the Job from view, but be able to revisit the results in future.

Job Details

The Job Details page is accessed from the Jobs Monitor (see page 53) page. It provides summary details for all the media files in the Jobs MediaSet as shown in the following figure.

This page also provides an option to playback the media files in the Jobs MediaSet. This option becomes available only when the VLC playback (see page 120) feature is enabled.



Job Details

Job Details

Files

Result	Filename	Size	Status	Progress	Start Time	End Time	Last Modified	Run Number	Processing System	Poster Frame
✖	C:\Cerify\.\cerify_demo \movies\grand_hotel.ts	9.35MB	Complete	100%	2009-12-02 16:14:37	2009-12-02 16:15:08	Unknown	1	Unknown	▶
✓	C:\Cerify\.\cerify_demo \movies\in_flight.ts	10.7MB	Complete	100%	2009-12-02 16:14:09	2009-12-02 16:14:37	Unknown	1	Unknown	▶
✖	C:\Cerify\.\cerify_demo \movies\vegas_train.ts	19.3MB	Complete	100%	2009-12-02 16:15:08	2009-12-02 16:15:43	Unknown	1	Unknown	▶

The Jobs Details page

To see exactly which errors caused the Job to fail, click either the ✖ processing result icon or the media file name. This will take you to the Processing Result (see page 57) page.

Clicking the ▶ play button starts the playback of the media file using the VLC media player.

To play back the media file, it must satisfy the following conditions:

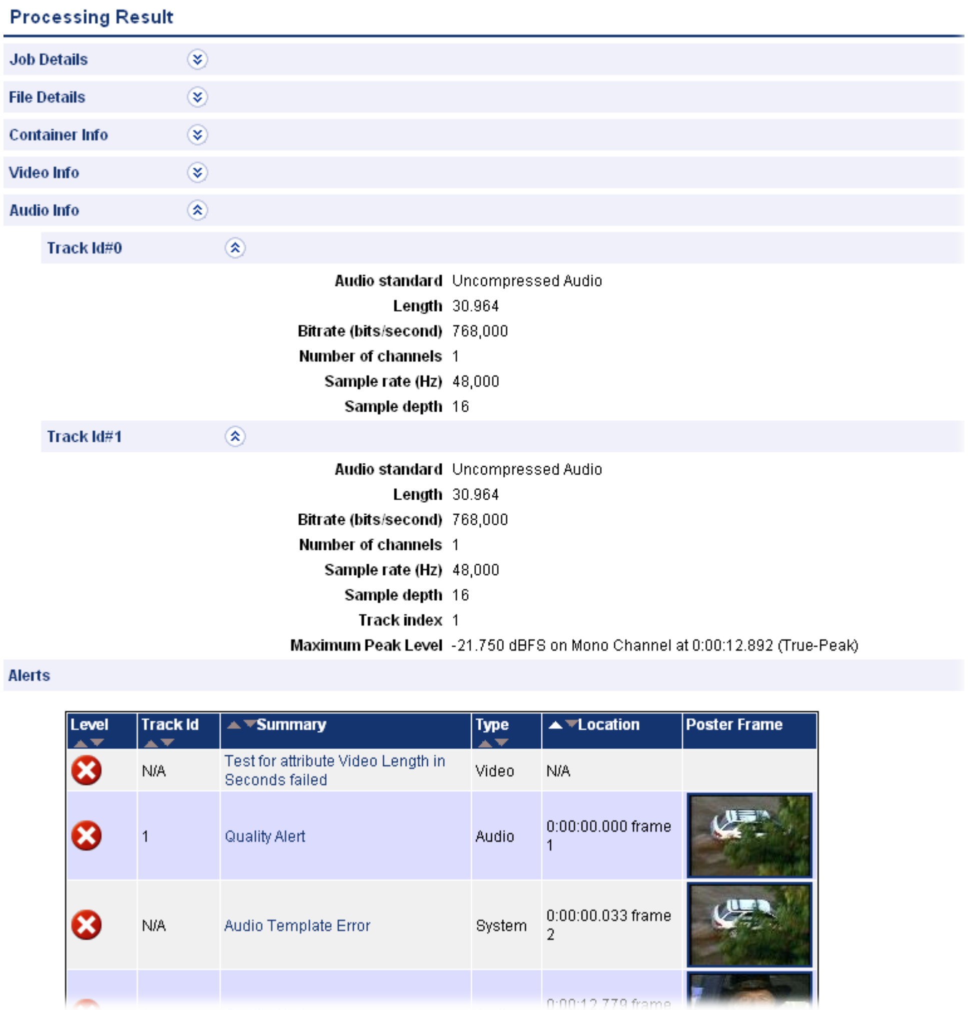
- The media file has not moved from the original location from where it was analyzed
- The media file has an encoding scheme that is supported by the VLC media player

Processing Result

The Processing Result page provides information on the alerts raised by a particular media file. This page also displays the stream information for the media file concerned. Stream information is grouped into three separate sections: Container Info, Video Info, and Audio Info. Where there are multiple audio tracks in the stream, all track information is displayed. You can select the extent of stream information that gets displayed on this page using the stream information display (see page 120) setting.

Stream information is updated as processing progresses. Many properties (such as "Picture size" or "Video standard") will be available shortly after processing begins, and others (such as "Length") will only be available after processing is complete. Some properties may be output and subsequently updated during processing. The values displayed will always be the most recent values encountered in the stream.

If the VLC player has been installed and enabled, you can also play back the media file from this page by selecting the play button that is available against eligible alerts.



Processing Result

Job Details

File Details

Container Info

Video Info

Audio Info

Track Id#0

Audio standard	Uncompressed Audio
Length	30.964
Bitrate (bits/second)	768,000
Number of channels	1
Sample rate (Hz)	48,000
Sample depth	16

Track Id#1

Audio standard	Uncompressed Audio
Length	30.964
Bitrate (bits/second)	768,000
Number of channels	1
Sample rate (Hz)	48,000
Sample depth	16
Track index	1
Maximum Peak Level	-21.750 dBFS on Mono Channel at 0:00:12.892 (True-Peak)

Alerts

Level	Track Id	Summary	Type	Location	Poster Frame
✖	N/A	Test for attribute Video Length in Seconds failed	Video	N/A	
✖	1	Quality Alert	Audio	0:00:00.000 frame 1	
✖	N/A	Audio Template Error	System	0:00:00.033 frame 2	
				0:00:12.779 frame	

The Processing Results page

You can drill down for more Alert Details (see page 59) on a particular alert by clicking either the ✖ processing result icon or the title of the alert.

Alert Levels

Four different levels of alerts can be reported by Cerify according to the severity of the issue: fatal, error, warning, and info.

Fatal

A fatal alert occurs when it is not possible for the system to complete processing of a media file and the processing is terminated. This might be caused by something in the media file bitstream, such as a severe syntax error that makes that stream completely unintelligible or an option being present in the bitstream that is not supported by the decoder. Alternatively, the alert might be caused by a system problem, such as a license error, or failure to copy a media file off a video server.

Error

An error alert occurs where the media file fails a check specified by one of the Templates that the media is being checked against. Alerts raised by syntax checking will be given an error status if they have the potential to prevent correct decoding of the stream. An example of this is where an out of range value has been used in a bit stream.

Warning

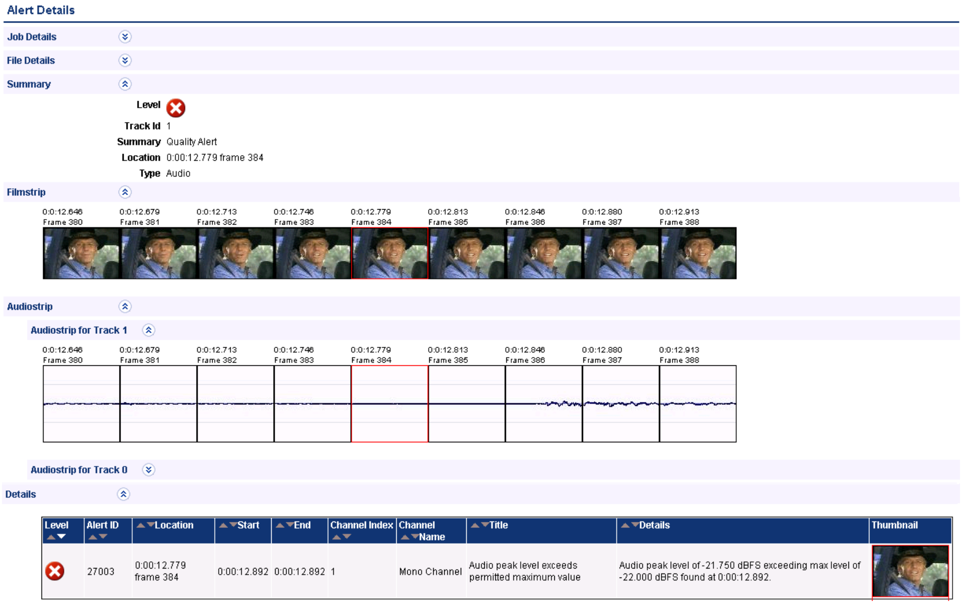
A warning alert indicates that there is some issue with the stream, but that this is not necessarily a problem. This might be that a certain number of alerts has been exceeded or that the bitstream is non-compliant in some minor way that almost certainly will not affect the decoding of the stream.

Info

Info alerts are relatively rare, and are used to inform users of additional useful information that will not cause a problem.

Alert Details

The Alert Details page provides more information on an individual alert, including thumbnail images of surrounding frames (where appropriate). The thumbnail images link to full Frame View (see page 61) of these frames.



Alert Details

Job Details

File Details

Summary

Level ✖

Track Id 1

Summary Quality Alert

Location 0:00:12.779 frame 384

Type Audio

Filmstrip

Audiostrip

Audiostrip for Track 1

Audiostrip for Track 0

Details

Level	Alert ID	Location	Start	End	Channel Index	Channel Name	Title	Details	Thumbnail
✖	27003	0:00:12.779 frame 384	0:00:12.892	0:00:12.892	1	Mono Channel	Audio peak level exceeds permitted maximum value	Audio peak level of -21.750 dBFS exceeding max level of -22.000 dBFS found at 0:00:12.892.	

The Alert Details page

The table within the details section provides specific details about the alert. Each of the table columns is outlined below.

Column	Description
Level	You can refer to alert levels (see page 58) and their associated icons (see page 127) for detailed description.
Alert ID	Unique alert ID. See alert IDs (see page 127).
Location	This is the position relative to the start of the stream where the alert was generated. For quality alerts, a more detailed description is given in start and end positions of quality alerts (see page 60).
Start	Optional column, only present for quality alerts. For more information, refer to, start and end positions of quality alerts (see page 60).
End	Optional column, only present for quality alerts. You can refer to start and end positions of quality alerts (see page 60) for detailed description.
Channel Index	Optional column, only present for audio quality alerts (see page 91). When processing a multi-channel audio stream, this index will indicate the channel to which the alert applies. Channel indices start from 1.
Channel Name	Optional column, only present for audio quality alerts (see page 91). The name of the channel to which the alert applies, as given by the audio standard.
Title	Description of alert type. This will always be the same for a given alert ID.

Column	Description
Details	Details of the alert specific to this occurrence. This should provide a reason as to why the test failed.
Thumbnail	Thumbnail of the video frame (if available) at the alert location. Click the image to view the full Frame View (see page 61)

Start and End Positions of Quality Alerts

The quality alerts (video quality (see page 80) and audio quality (see page 91)) are special in that they can apply to a range of video or audio. This is in contrast to most alerts, which have an instantaneous position. Because of this, quality alerts within Cerify contain the following additional information:

- The start position of the error condition
- The location at which the error condition exceeded its permitted length
- The end position of the error condition

Only one alert will be raised for a given error condition sequence, regardless of length.

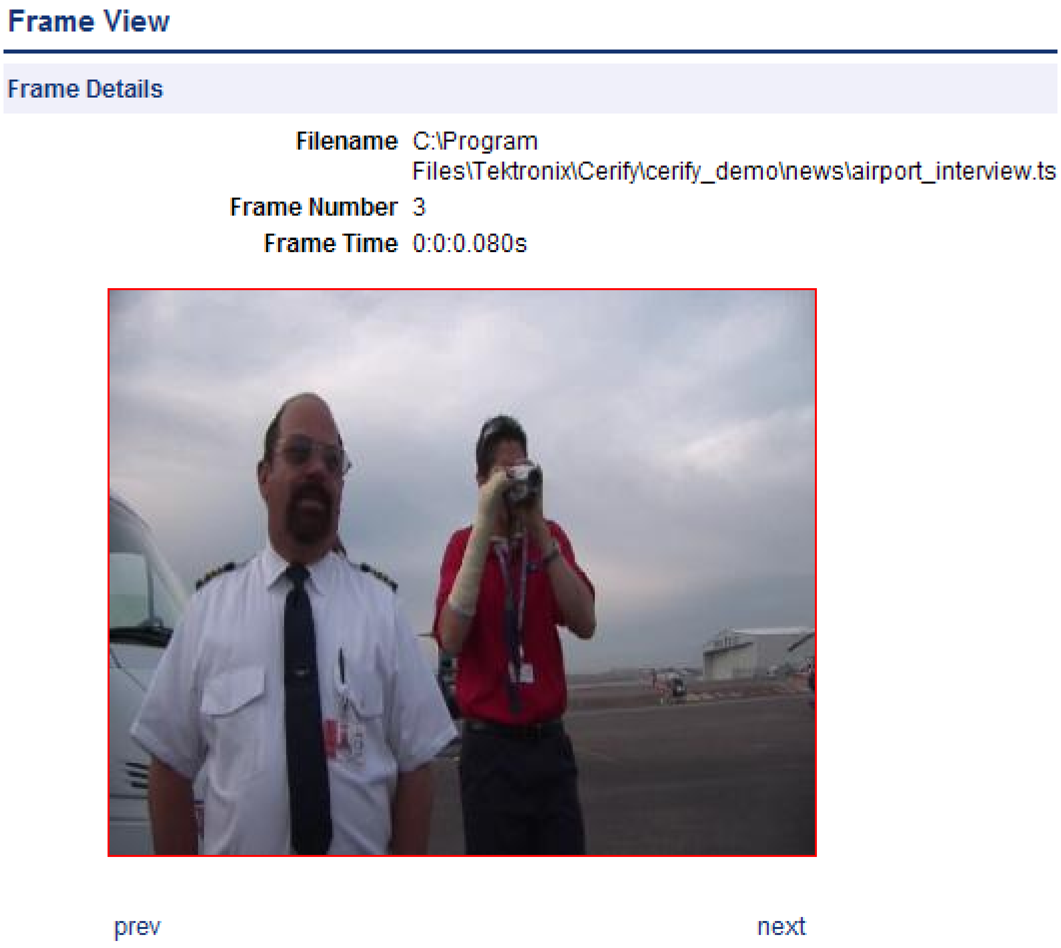
Example: A rule is set up to disallow more than 5 seconds of black during video. A video clip has an unwanted sequence of 30 seconds of black beginning at 1m 20s. Cerify will generate a single video quality alert with the following information:

- Start: 1m 20s - the start of the black sequence
- Location: 1m 25s - the point at which 5 second limit was exceeded
- End: 1m 50s - the end of the black sequence

Frame View

The Frame View Page shows a larger thumbnail image of the Frame. This thumbnail is based upon a down sampled version of the full frame, using the top field only for interlaced content, so in some cases the detected artifact may not be visible. Red rectangles highlight any areas of the frame that generated alerts.

The "next" and "prev" links at the bottom of the frame image allow navigation across frames in the film-strip display for the alert. These links are displayed based on the position of the current frame in the film-strip. The first frame of the film-strip has only the "next" link associated with it and the last frame has only the "prev" link on it.



Frame View

Frame Details

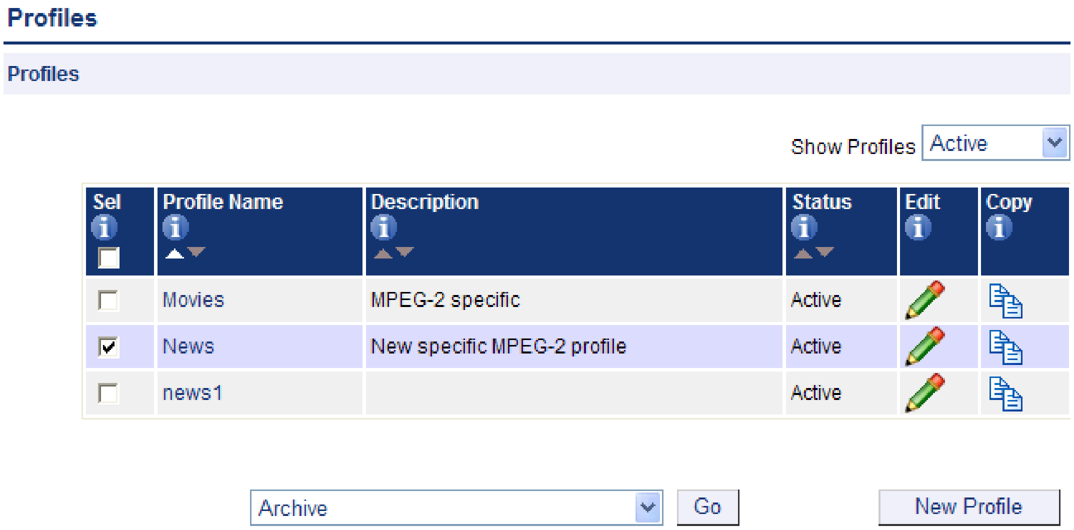
Filename	C:\Program Files\Tektronix\Cerify\cerify_demo\news\airport_interview.ts
Frame Number	3
Frame Time	0:0:0.080s

The Frame View page

Profiles

A Profile gathers together a Container (see page 73), Video (see page 76), Audio (see page 89) and Action (see page 100) Template, providing a complete set of checks that can be applied to a MediaSet (see page 104). Any of the component Templates can be omitted, depending on user requirements.

The top-level Profiles page is accessed by selecting the **Profiles** button from the navigation bar. When you open this page, you are presented with a table (see page 35) displaying Profiles filtered according to Active/Archive View Control (see page 34). If no Profiles match the current filter, an informative message will be displayed.



Profiles

Profiles

Show Profiles: Active

Sel ☐	Profile Name	Description	Status	Edit	Copy
☐	Movies	MPEG-2 specific	Active	✎	⎘
☑	News	New specific MPEG-2 profile	Active	✎	⎘
☐	news1		Active	✎	⎘

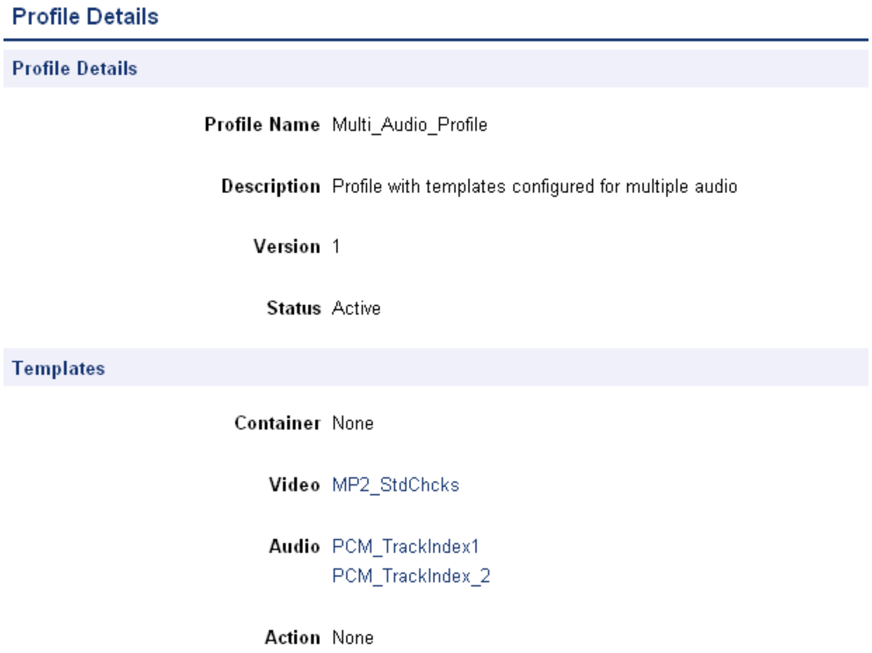
The Profiles page

From the top-level Profiles page (see page 62), it is possible to:

- Archive and restore Profiles
- View Profile details (see page 63) by clicking the Profile name in the **ProfileName** column.
- Edit a Profile (see page 63) by clicking the edit ✎ icon.
- Create a new Profile (see page 64) by clicking the **New Profile** button.
- Create a new Profile from an existing one (see page 64) by clicking the ⎘ copy icon.

Profile Details

The Profile Details page shows detailed information about a Profile.



Profile Details

Profile Details

Profile Name	Multi_Audio_Profile
Description	Profile with templates configured for multiple audio
Version	1
Status	Active

Templates

Container	None
Video	MP2_StdChcks
Audio	PCM_TrackIndex1 PCM_TrackIndex_2
Action	None

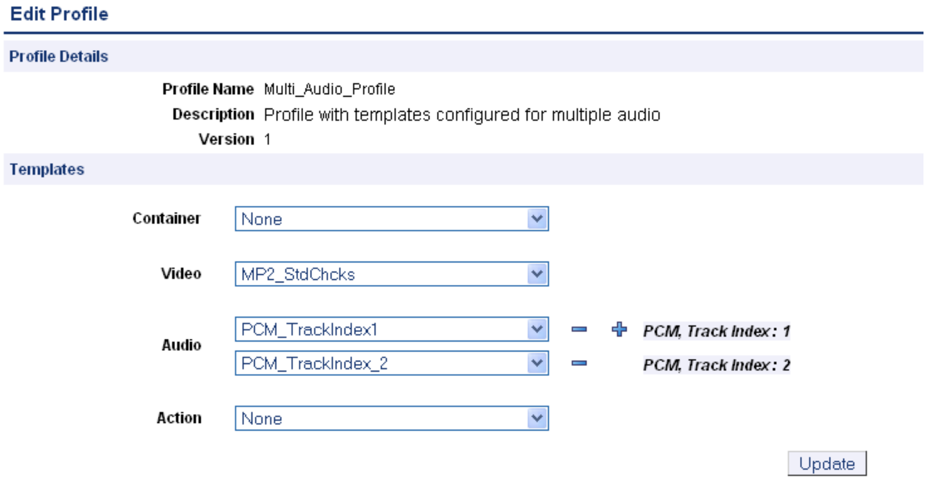
The Profile Details page

Edit Profile

A Profile can be edited to change its constituent Templates:

- Container (see page 73)
- Video (see page 76)
- Audio (see page 89)
- Action (see page 100)

The Profile name and description cannot be changed.



Edit Profile

Profile Details

Profile Name Multi_Audio_Profile

Description Profile with templates configured for multiple audio

Version 1

Templates

Container None

Video MP2_StdChcks

Audio PCM_TrackIndex1 PCM, Track Index: 1

PCM_TrackIndex_2 PCM, Track Index: 2

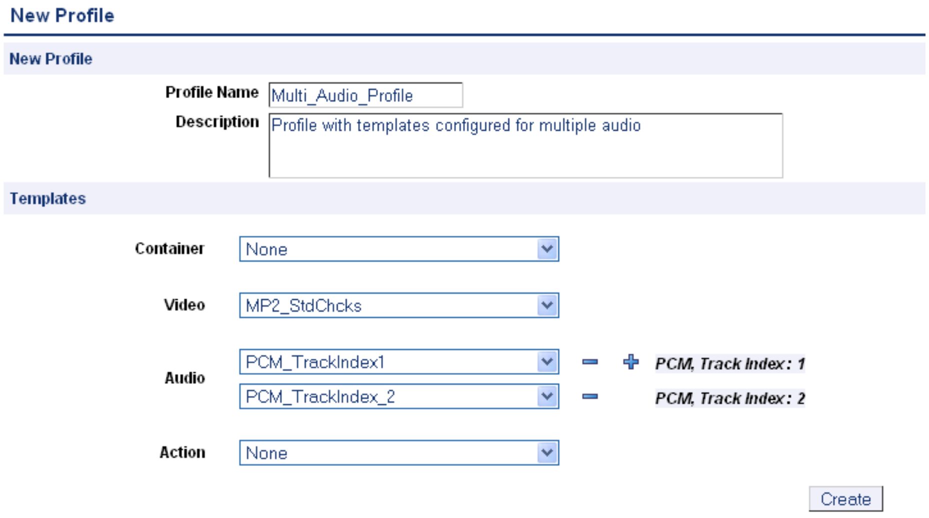
Action None

Edit Profile page

Click the **Update** button to submit changes to the Profile (see page 62).

New Profile

The New Profile page is accessed either by copying an existing Profile or by creating a new Profile.



New Profile

New Profile

Profile Name Multi_Audio_Profile

Description Profile with templates configured for multiple audio

Templates

Container None

Video MP2_StdChcks

Audio PCM_TrackIndex1 PCM, Track Index: 1

PCM_TrackIndex_2 PCM, Track Index: 2

Action None

The New Profile page

To create a new Profile, enter a name for the Profile and, optionally, a description, and select the desired Templates (see page 65) from the drop-down menus. To add a second audio template, click the plus icon next to the audio field. Click the **Create** button to create the Profile.

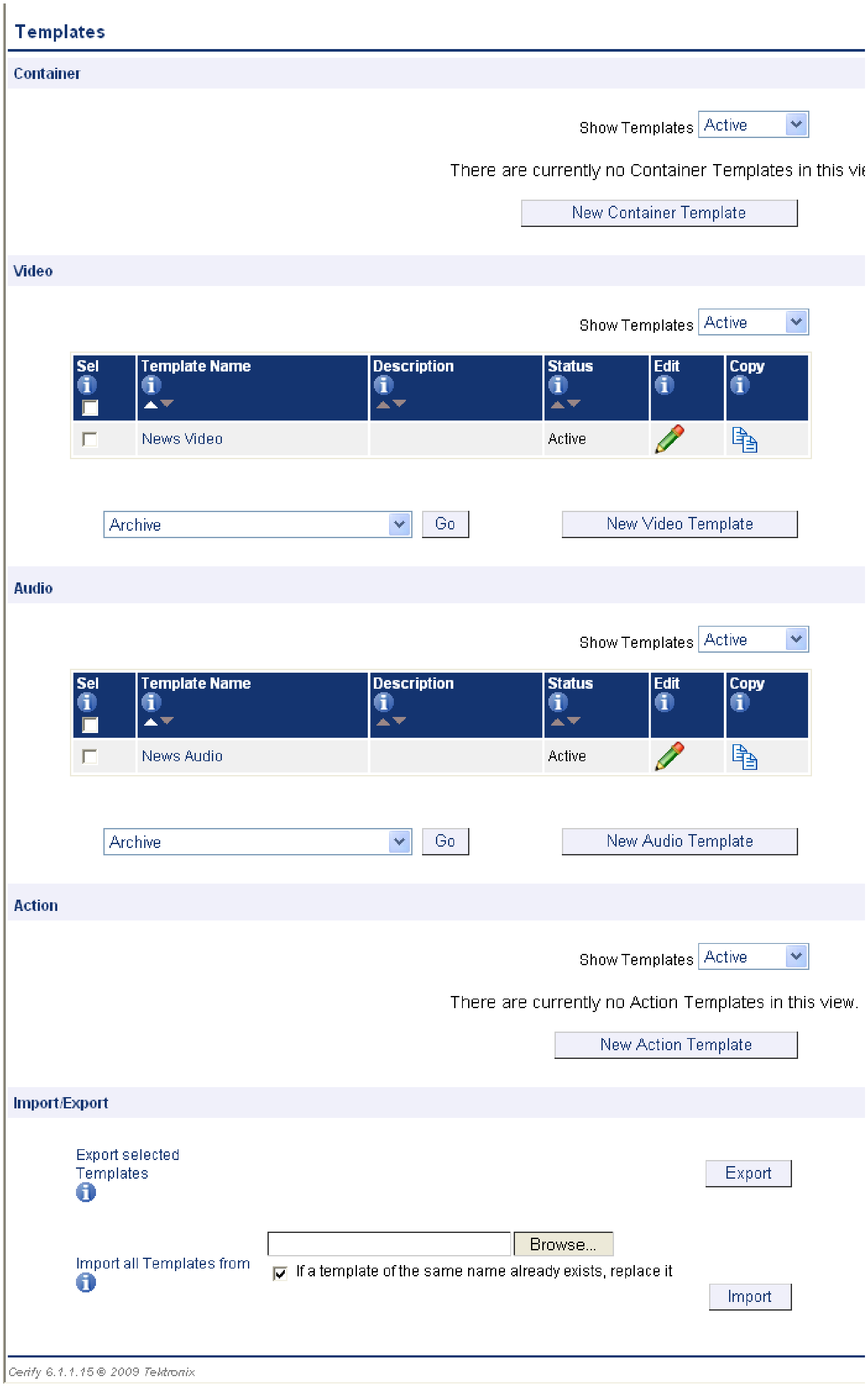
Templates

Templates allow you to collect together rules to be used or actions to be taken when checking files in a MediaSet (see page 104).

The four types of Templates are:

- Container Templates (see page 73), which gather rules applying to the container layer
- Video Templates (see page 76), which gather rules applying to video elementary streams
- Audio Templates (see page 89), which gather rules applying to audio elementary streams
- Action Templates (see page 100), which gather actions to be performed when generating Job processing events

The top-level Templates page is accessed by selecting the **Templates** button from the navigation bar. When you open this page, you are presented with tables (see page 35) displaying Container, Video, Audio, and Action Templates filtered according to Active/Archive View Control (see page 34). If no Templates match the current filter, an informative message will be displayed. The following figure shows a Container Template, a Video Template, an Audio Template, and an Action Template.



Templates

Container

Show Templates Active

There are currently no Container Templates in this vi

New Container Template

Video

Show Templates Active

Sel □	Template Name	Description	Status	Edit	Copy
□	News Video		Active	✎	⧉

Archive Go New Video Template

Audio

Show Templates Active

Sel □	Template Name	Description	Status	Edit	Copy
□	News Audio		Active	✎	⧉

Archive Go New Audio Template

Action

Show Templates Active

There are currently no Action Templates in this view.

New Action Template

Import/Export

Export selected Templates Export

Import all Templates from Browse...

☑ If a template of the same name already exists, replace it

Import

Cerify 6.1.1.15 © 2009 Tektronix

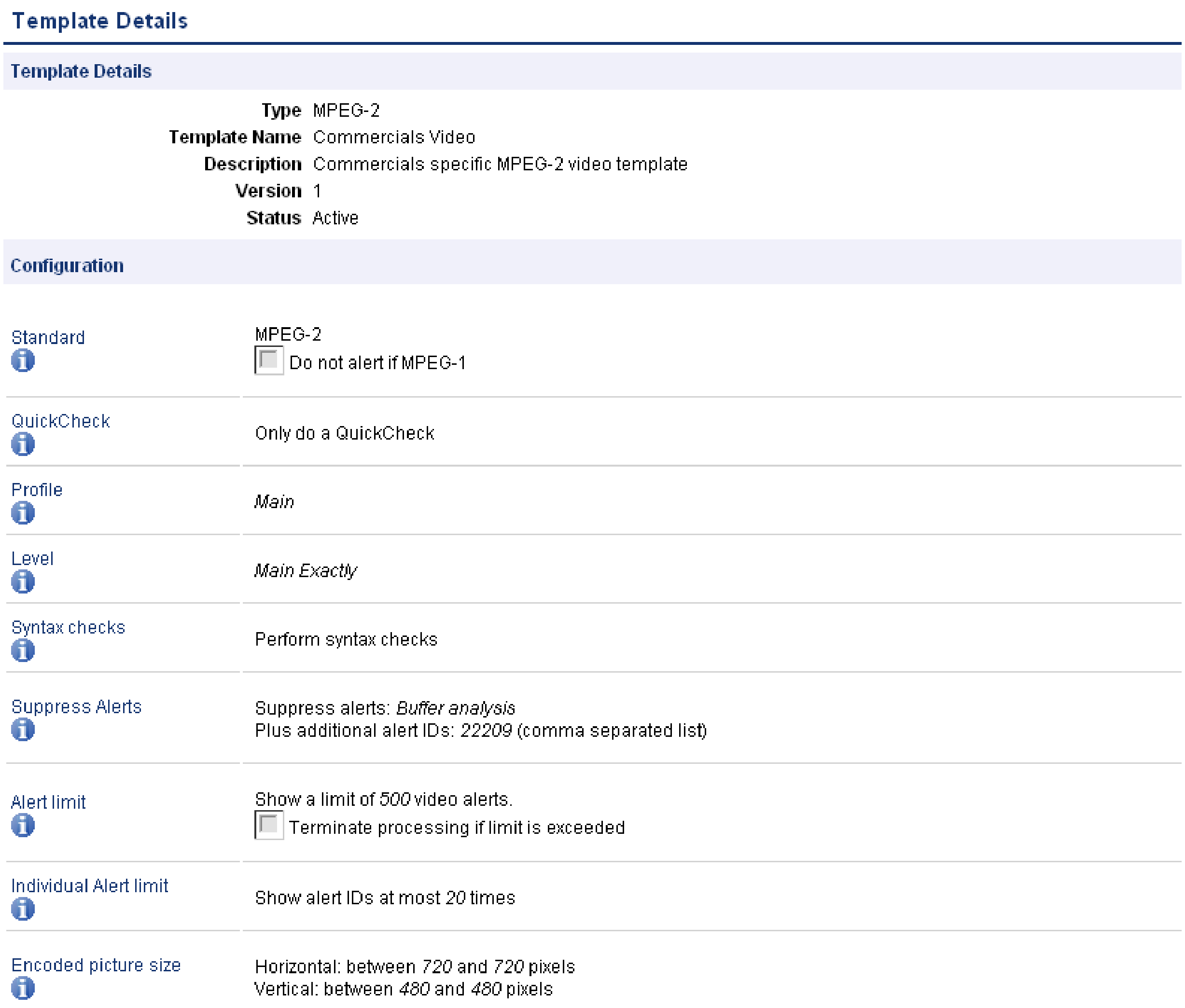
NOTE. *Some example templates are preloaded onto Cerify. These templates can be used, copied, edited, and archived in the same way as those created by users. The XML files containing these templates can be found in <Installation directory> /Example Templates.*

From the top-level Templates page (see page 65) it is possible to:

- Archive and restore Templates (see page 34)
- View details of a Template (see page 68) by clicking its name in the **Template Name** column
- Edit a Template (see page 69) by clicking the edit ✏ icon
- Create a new Template (see page 70) by clicking the **New Template** button for the type of Template (see page 65) required
- Create a new Template from an existing one (see page 70) by clicking the ⎘ copy icon
- Export Templates (see page 71)
- Import Templates (see page 72)

Template Details

The **Template Details** page shows detailed information about a Template, but does not allow the details to be changed.



Template Details

Template Details

Type	MPEG-2
Template Name	Commercials Video
Description	Commercials specific MPEG-2 video template
Version	1
Status	Active

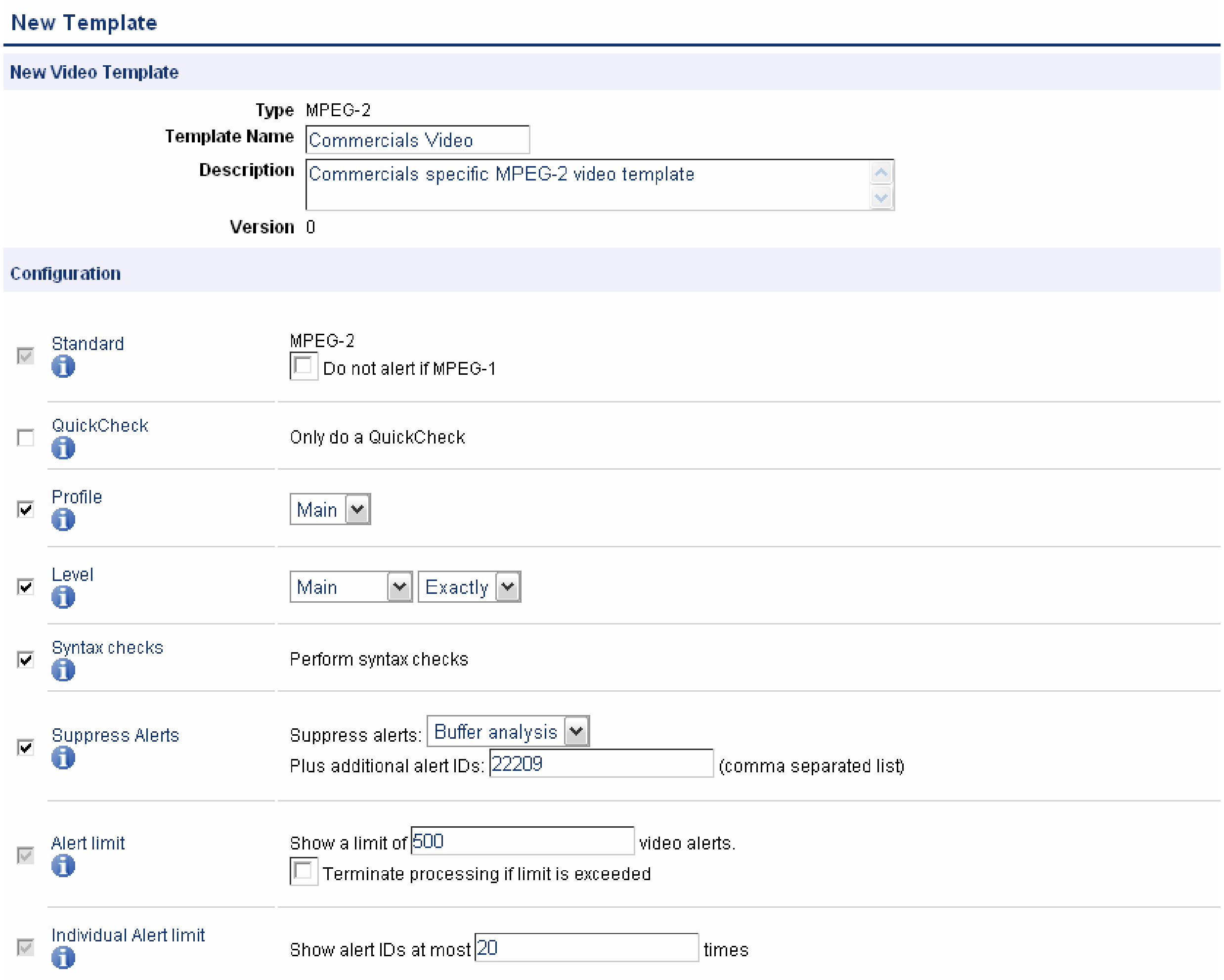
Configuration

Standard	MPEG-2 ☐ Do not alert if MPEG-1
QuickCheck	Only do a QuickCheck
Profile	*Main*
Level	*Main Exactly*
Syntax checks	Perform syntax checks
Suppress Alerts	Suppress alerts: *Buffer analysis* Plus additional alert IDs: *22209* (comma separated list)
Alert limit	Show a limit of *500* video alerts. ☐ Terminate processing if limit is exceeded
Individual Alert limit	Show alert IDs at most *20* times
Encoded picture size	Horizontal: between *720* and *720* pixels Vertical: between *480* and *480* pixels

The Template Details page

Edit Template

A Template can be edited to change the **Template Name**, **Description**, and Template rule parameters. In the following figure, the user has entered a **Template Name** and description, and has enabled some rules. Not all of the rules for the Template are shown.



New Template

New Video Template

Type	MPEG-2
Template Name	Commercials Video
Description	Commercials specific MPEG-2 video template
Version	0

Configuration

☑	Standard	MPEG-2 □ Do not alert if MPEG-1
□	QuickCheck	Only do a QuickCheck
☑	Profile	Main
☑	Level	Main Exactly
☑	Syntax checks	Perform syntax checks
☑	Suppress Alerts	Suppress alerts: Buffer analysis Plus additional alert IDs: 22209 (comma separated list)
☑	Alert limit	Show a limit of 500 video alerts. □ Terminate processing if limit is exceeded
☑	Individual Alert limit	Show alert IDs at most 20 times

The Edit Template page

Click the **Update** button at the bottom of the page to submit changes to the Template. This will also update the version of the Template.

New Template

The New Template page is accessed either by copying an existing Template, or by creating a new Template (see page 65).

To create a new Template, determine the type of Template you want to create and click the corresponding **New Container Template**, **New Video Template**, **New Audio Template**, or **New Action Template** button.

In the following screen, select the standard for the Template you want to create. For a Video Template, this might be MPEG-2, MPEG-4 or some other video standard. The resulting New Template page is very similar to the Edit Template (see page 69) page.

Enter a name for the Template and, optionally, a description. Finally, you must set up the Template rule definitions.

Template rules specify precisely what to check when processing content. For example, a Template rule might require that video content has a certain resolution, or that the audio stream has a certain bit rate. The Template rules that can be defined depend upon the type of Template and its standard.

For more details on each rule, refer to the descriptions in the following sections on Container Templates (see page 73), Video Templates (see page 76), Audio Templates (see page 89) and Action Templates (see page 100).

To find more information about a rule when defining a Template, click the ℹ next to the rule name.

Template rules are enabled and disabled by clicking the checkbox on the left side of the **Edit Template** page. A Template can contain a single enabled rule or many enabled rules. Different rules require different parameters to be defined, depending on the type of rule. For example, a rule that specifies video resolution will require you to enter the expected number of pixels.

When you have finished defining all of the rules, click the **Create** button at the bottom of the page to create the Template.

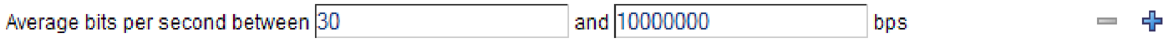
If you are uncertain as to what rules and parameter values to use, try looking at one of the preloaded example templates and gradually adjust the rules until you are comfortable with the operation of the template.

If you have imported a database from an earlier version of Cerify (before 6.x), the pre-loaded example templates will not be available. In this case, they can be imported as described in the Importing Templates (see page 51) section.

Multiple Sets of Values

Some of the rules in Container, Video and Audio Templates accept multiple sets of values. You can define these rules like any other - with a single set of values, or you can define multiple set valid values. If you use multiple sets, the test will pass if the value matches any of the sets.

These rules can be recognized by the add/remove buttons to the right of the rule.



Average bits per second between 30 and 10000000 bps − +

Rules that accepts multiple sets of values

To add another set of valid values to the rule, click on the + Add button. A new row of inputs will appear at the bottom of the rule. You can add as many new rows as you need.

To remove any set of values from the rule, click on the − Remove button to the right of that row. The row will disappear from the rule. You can remove all rows but one.

Exporting Templates

Templates can be exported from the top-level Templates page. Once exported, Templates can be imported into any Cerify system running a compatible version of Cerify. Any number of Templates, of any type (Container, Video, Audio and Action) and status (Active or Archived), can be exported to a single file.

NOTE. *When exporting Action Templates, passwords used by rules to access remote locations are not exported.*

To export a set of Templates, select the templates you want to export by checking the corresponding check boxes in the leftmost column of the Templates tables and pressing the **Export** button at the bottom of the page. Choose a location to save the Templates export file to when prompted. Exported Template files use XML to store template information, following the Template Information schema definition.

If you are viewing this page from the Help pages in the Cerify Web interface, you can click the following link to view the Template Information schema definition

To download the Template information XML schema:

- In Microsoft Internet Explorer, right-click the above link and select the **Save Target As** option from the pop-up menu.
- In Mozilla Firefox, right-click the above link and select the **Save Link As** option from the pop-up menu.

If you are viewing this page from a printed or a PDF version of the Cerify user manual, access the URL `http://your_cerify_host/TemplateInformation.xsd`, replacing `your_cerify_host` with the IP address or host name of your Cerify system, to view the Template Information Schema definition.

When a table contains too many Templates to fit on a single page, the system will split it to be displayed over a number of pages. If you cannot see all the Templates you want to export in the tables, you may need to change the number of Records per page (see page 111) to allow more Templates to be shown on each page. You may also need to change the Active/Archive view (see page 34) to display both Active and/or Archived Templates.

Importing Templates

Any Template file generated by exporting Templates as described in Exporting Templates (see page 51) can be imported into any Cerify system running a compatible version of Cerify. This is done from the top-level Templates page (see page 65).

NOTE. *There are some example template XML files in the directory "Example Templates" inside the directory where the Cerify application is installed. These templates are preloaded into Cerify when it is first installed.*

NOTE. *After importing Action Templates, it is necessary to edit them and re-enter the appropriate passwords for rules that access local/remote locations.*

To import a set of templates, click the **Browse** button at the bottom of the Templates page to access the **Open File** dialog box. Using this dialog box, navigate to the location of the template file to import, select it, and click **Open**. Select the **“If template of the same name already exists, replace it”** checkbox to update the templates of the same name and standard which already exist in Cerify. If you do not select this option, templates in the file with a name that already exists in Cerify will not be imported. Finally, click the **Import** button to import templates from the selected file.

If all Templates in the file are successfully imported, a success message will be displayed on the Templates page. More detailed messages, listing all imported Templates, can be found in the Admin Log (see page 122).

If any of the Templates in the file cannot be imported, an error message will be displayed on the Templates page. More detailed error messages, listing all imported Templates and all individual errors, can be found in the Admin Log.

There are three groups of errors that can prevent a Template from being successfully imported:

- **System Level Errors**

System Level errors are raised when the file being imported does not conform to the Template Information schema definition. If you are viewing this page from the Help pages in the Cerify Web interface, you can click the following link to view the Template Information schema definition.

Message in Admin Log	Cause
Error importing templates: File does not validate against schema.	The file being imported does not conform to the schema.

Template Level Errors

Template Level errors are raised when a Template in the file being imported is not valid, and cannot be imported. Other valid templates within the XML file will still be imported. There are three types of Template Level Errors:

Error message	Cause
Error in Template "X": Template could not be imported. A Template with that name already exists. Select the "If template already exists, replace it" option when importing to overwrite the existing version.	There is a Template in the file to be imported named "X", but a Template named "X" already exists in Cerify. If the "If template already exists, replace it" option is not selected, this error will be raised. If it is selected, Template "X" will be updated with the new version being imported.
Error in Template "X": Template could not be imported. Attempt has been made to create a template for an unrecognized standard.	There is a Template in the file to be imported named "X". The standard defined in the file for this Template is not one of the Video, Audio, or Container standards recognized by Cerify.
Error in Template "X": Template could not be imported. Mandatory rules Y, Z not present.	There is a Template in the file to be imported named "X". Rules Y and Z, which are mandatory for the standard of that Template, are not present in that Template. Mandatory rules are those that always appear checked when creating a Template using the Web UI and cannot be unchecked. For example, Alert Limit and Particular Alert Limit.

Rule Level Errors

Rule Level errors are raised when a Template in the file being imported includes an invalid rule; in this case, the Template is partially imported, excluding the invalid rule. There are four types of Rule Level Errors:

Error message	Cause
Error in Template "X": Rule "Y" could not be imported. A rule ID submitted has not been recognized.	Rule "Y" defined in Template "X" is not recognized as a valid rule.
Error in Template "X": Rule "Y" could not be imported. The rule input name submitted ("A") is not recognized.	Rule "Y" defined in Template "X" is invalid as one of the inputs defined for it, "A", is not recognized as belonging to that rule.
Error in Template "X": Rule "Y" could not be imported. "A" is required.	Rule "Y" defined in Template "X" is invalid as one of the inputs defined for the rule, named "A", must have a valid value but is either empty or not present in the import file.
Error in Template "X": Rule "Y" could not be imported. The value "x" submitted for the rule input "A" is not a valid option. OR Error in Template "X": Rule "Y" could not be imported. "A" is not a number.	Rule "Y" defined in Template "X" is invalid as the value "x" supplied for input "A" is not valid.

Container Templates

Container Templates collect together rules applying to the wrapper or container layer.

Checks Common to All Container Layers

Check	Description
Standard	Confirms that the container layer is of the type indicated in the Template (for example, MPEG-2 Transport Stream). This check is mandatory and cannot be disabled. Trying to treat a container format wrongly, for example processing an MPEG-2 Transport Stream as MXF, will almost certainly lead to spurious alerts. Cerify will raise an alert and cease analysis immediately in the event of a mismatch between observed and expected container format.
Integrity checks	Checks the syntax and integrity of the container layer; that is, the problems in the wrapper file, but not in the elementary streams. ***NOTE.*** *Cerify does not perform full syntax checks for container layers, and is limited to reporting serious errors that prevent the correct interpretation of the stream. This check is mandatory and cannot be disabled.*
Suppress Alerts	Alerts may be suppressed individually by entering the alert ID into the text field titled **Suppress alert IDs**. Note that fatal alerts can never be suppressed. Suppressed alerts will not count towards any of the alert limits set by the **Alert limit** or **Individual Alert limit**.
Alert limit	This rule can be used to limit the number of container alerts raised. It is not possible to switch off this check; however the value can be set to a maximum of 10,000. Clicking the "Terminate processing if limit is exceeded" checkbox causes file processing to stop if the alert limit is exceeded. In this case, certain stream properties that require the whole file to be processed (such as length of stream) are not reported. Similarly, end of stream test cases will not be executed. If the checkbox is not checked, processing will proceed to completion but any further container alerts will be suppressed and not shown. In either case, an alert will be raised, indicating that further alerts have been suppressed. If the alert limit has been exceeded, fatal alerts will still be displayed. Note that the **Individual Alert limit** can be used to prevent the results being swamped by a particular container alert.
Individual Alert limit	This rule can be used to limit the number of container alerts with the same ID number. This prevents the results being swamped by a particular container alert. It is not possible to switch off this check; however, the value can be set to a maximum of 10,000. This value should be kept lower than the **Alert limit** value, since the latter takes precedence.
File size	Checks the size of the input file in bytes. For container layers that support external references (for example MXF and QuickTime files) this does not include the sizes of the external files.
Play time	Checks the stream play time, defined as the maximum play time of all decoded audio and video streams.
Bit rate	This tests the bit rate for the stream, calculated as the file size divided by the play time, as defined above. Multiple sets (see page 71) of valid values can be defined for this rule.
Video streams	This tests the number of video elementary streams contained within the container layer.
Audio streams	This tests the number of audio elementary streams contained within the container layer.
Audio/video duration	Checks that the audio stream duration is longer than the video stream duration by a minimum amount but not by more than the maximum specified amount.
Skip First Few Alerts	This rule can be used to suppress the audio and video alerts for the first few frames or milliseconds of the file.
Skip Last Few Alerts	This rule can be used to suppress the audio and video alerts for the last few frames or milliseconds of the file.

Container Checks Specific to MPEG-2 Transport Stream Standard

Check	Description
Packet size	Checks the packet size used by the MPEG-2 Transport Stream. This can be 188, 192, 204, or 208 bytes. Packet size is defined as the separation between sync_bytes in the MPEG-2 transport stream. This is a check on the separation of the first pair of sync_bytes only. If the packet size varies later in the stream, it will be reported as a synchronization error.
CableLabs VOD	This tests against some of the requirements of CableLabs Video-On-Demand Content Encoding Profiles Specification (MD-SP-VOD-CEP-I01-040107). The checks are: that the transport stream contains a single Program only; that audio streams must have stream type equal to 0x81 (Dolby Digital); that video streams must have stream_type equal to 0x02 (MPEG-2); that an MPEG-2 video stream is on PID 0x1E1; that a Dolby Digital audio stream is on PID 0x1E2, and any other audio streams follow on consecutive PIDs; that the Program Clock Reference (PCR) occurs in PID 0x1E1 (the video stream).
DVB Closed Caption	Checks that the Program Map Table associated with the decoded video stream includes a PID with Closed Caption data. Such a PID must include a VBI_data_descriptor (as described in ETSI EN 301 775) containing a closed_captioning_data_field() element.
DVB Teletext	Checks that the Program Map Table associated with the decoded video stream includes a PID with Teletext data. Such a PID must include a VBI_data_descriptor (as described in ETSI EN 301 775) containing a txt_data_field() element.
Video PID	Checks that the decoded video stream was found on a specific PID or PIDs. Multiple PIDS can be specified using a comma-separated list, and/or PID ranges. For example, "128-130,481" checks that the video stream is on any of PIDs 128, 129, 130 or 481. Hexadecimal PID numbers can be given by using the '0x' prefix.
Audio PID	Checks that the decoded audio stream was found on a specific PID or PIDs. Multiple PIDS can be specified using a comma-separated list, and/or PID ranges. For example, "482-484,4098" checks that the video stream is on any of PIDs 482, 483, 484 or 4098. Hexadecimal PID numbers can be given by using the '0x' prefix. If this rule used on a file which contains no audio stream, an alert will not be generated. To catch this case, use the "Number of audio streams" rule.

Container Checks Specific to MPEG-2 Program Stream Standard

Check	Description
VBI	Checks for the presence of Pinnacle Vertical Blanking Information, as indicated by the use of Pinnacle proprietary syntax in private_stream_2
Video	Checks for the presence of at least one video stream as indicated by the presence of packets with a stream_id in the range 0xE0 - 0xEF inclusive
Audio	Checks for the presence of at least one audio stream as indicated by the presence of packets with a stream_id in the range 0xC0 - 0xDF inclusive
Pack header	Checks for the presence of a pack_header PS packet type as indicated by the presence of packets with the start code 0x000001BA
System header	Checks for the presence of a system_header PS packet type as indicated by the presence of packets with the start code 0x000001BB
Program Stream Map	Checks for the presence of a program_stream_map PS packet type as indicated by the presence of packets with the start code 0x000001BC

Check	Description
Program Stream Directory	Checks for the presence of a program_stream_directory PS packet type as indicated by the presence of packets with the start code 0x000001FF
Private Stream 1	Checks for the presence of private_stream_1 as indicated by packets with stream_id = 0xBD
Private Stream 2	Checks for the presence of private_stream_2 as indicated by packets with stream_id = 0xBF
Padding stream	Checks for the presence of padding_stream as indicated by packets with stream_id = 0xBE

Container Checks Specific to SMPTE 377M / MXF Standard

Check	Description
Operational Pattern	Checks the Operational Pattern reported by the MXF file.
Footer Partition	Tests that a footer partition pack is present at the end of the MXF file. A missing footer partition often indicates that a file has been truncated, and might cause problems for editing software and other systems.
Clip Duration	Compares the duration of the decoded video stream against the duration of the material package defined in the MXF file, and alerts if they are different. There is a tolerance of 1 video frame duration. A failure of this test might mean that the MXF file has been badly packaged or truncated.
Clip Start Timecode	Tests the start timecode of the MXF file material package. It is possible to specify a minimum, a maximum, or both. Timecodes must be given in the format HH:MM:SS:FF (where FF is frame number).

Video Templates

Video Templates gather rules applying to video elementary streams.

Common Video Configuration Checks

Check	Description
Standard	Checks that the input file is encoded to the expected standard. Without this check, an MPEG-2 file (for example) could pass an MPEG-4 Video Template provided that the Template did not test any MPEG-4 specific features. Since treating an MPEG-2 stream as MPEG-4 will almost certainly lead to spurious alerts, Cerify will raise an alert and cease analysis immediately in the event of a mismatch between observed and expected standard. If the media file does not contain a video stream, an alert will be raised and processing will terminate immediately.
Syntax Checks	Enables strict testing for compliance to the detected standard. This will generate alerts for corrupted streams, and streams generated by misconfigured or noncompliant encoders. Each type of alert has a numeric ID, which is shown in the Alert Details page.

Check	Description
Suppress Alerts	Alerts can be suppressed individually (by entering the alert ID into the text field titled **Plus additional alert IDs**) as well as in a predefined group selected from the list. Note that fatal alerts can never be suppressed. Suppressed alerts will not count towards any of the alert limits set by the **Alert limit** or **Individual Alert limit**.
Quick Check	Enabling the Quick Check rule prompts Cerify to run a partial check of the media file being tested. This rule lets you quickly gather basic stream information and perform checks on them without performing a full decode of the asset. Stream information thus gathered can also be used by automation clients using the CeriTalk API to select an appropriate Profile to apply to the media file or to perform content sorting based on stream attributes. The following tests will **not** be run when performing a Quick Check: ■ Container Templates: ■ File size ■ Play time ■ Bitrate ■ Has Pinnacle VBI (MPEG-2 Program Stream) ■ Has Video Stream (MPEG-2 Program Stream) ■ Has Audio Stream (MPEG-2 Program Stream) ■ Has System Header (MPEG-2 Program Stream) ■ Has Program Stream Map (MPEG-2 Program Stream) ■ Has Program Stream Directory (MPEG-2 Program Stream) ■ Has Private Stream 1 (MPEG-2 Program Stream) ■ Has Private Stream 2 (MPEG-2 Program Stream) ■ Has Padding Stream (MPEG-2 Program Stream) ■ Packet size (MPEG-2 Transport Stream) ■ Has DVB Closed Caption Information (MPEG-2 Transport Stream) ■ Has DVB Teletext Information (MPEG-2 Transport Stream) ■ Operational Parameter (MXF)

Check	Description
Quick Check (continued)	■ Video Templates: ■ Play time ■ Frame rate ■ Bitrate ■ Data partitioning (MPEG-4, H.264) ■ AC Prediction (MPEG-4) ■ Forward Prediction (VC1 and MPEG-4) ■ Bidirectional Prediction (VC1 and MPEG-4) ■ Loop Filter (VC1) ■ Copyright extension (MPEG-2) ■ First GOP closed ■ GOP interval ■ All quality tests: Black frames Freeze frame Loss of Chroma Letterbox Pillarbox Blockiness Luma Limit Violation RGB Component Violation Quantization ■ Audio Templates: ■ Play time ■ Bitrate ■ All quality tests: Silence Mute Peak level maximum Peak level minimum Clipping Test tone

Check	Description
Alert limit	This rule can be used to limit the number of video alerts raised. It is not possible to turn off this check; however the value can be set to a maximum of 10,000. Selecting the "Terminate processing if limit is exceeded" checkbox causes file processing to stop if the alert limit is exceeded. In this case, certain stream properties that require the whole file to be processed (such as length of stream) are not reported. Similarly, end of stream test cases will not be executed. If the checkbox is not cleared, processing will proceed to completion but any further video alerts will be suppressed and not shown. In either case, an alert will be raised, indicating that further alerts will not be raised. If the alert limit has been exceeded, fatal alerts will still be displayed. Note that the **Individual Alert limit** can be used to prevent the results being swamped by a particular video alert.
Individual Alert limit	This rule can be used to limit the number of video alerts with the same ID. This prevents the results being swamped by a particular video alert. It is not possible to turn off this check; however, the value can be set to a maximum of 10,000. This value should be kept lower than the **Alert limit** value, since the latter takes precedence.
Field Order	This rule checks that the field dominance indicated by the coded stream and the decoded video is consistent with a given field order. ■ **Top field first** will check that the coded stream is flagged as such and that the bottom field does not appear to be from an earlier point in time than the top field. ■ **Bottom field first** for the opposite of Top field first. ■ **Consistent with stream flags** checks that the decoded video field order is the same as the field order indicated by the coded stream. In the case where pulldown is achieved through the use of stream flags, or any stream where the coded field order is expected to change, **Consistent with stream flags** is the only appropriate check to use. For streams that have already had pulldown applied in the source video (so that the coded field order is constant), any of these three checks may be suitable.
Interlace	This check will either require or prohibit interlaced coding (not available for H.263).
Play time	Used to check the play time of the video elementary stream. Defined as the presentation time of the last video frame in display order. Multiple sets (see page 71) of valid values can be defined for this rule.
Encoded Picture Size	Tests the video resolution (frame width by frame height) in pixels. The size reported is used to encode the picture. For some codecs, this size may be different to the intended display size of the picture. Frame width is defined as the coded video frame width reported by the first stream header only. Frame height is defined as the coded video frame height reported by the first stream header only. For interlaced video, encoded picture size is the height of the reconstructed frame (twice the field height). Multiple sets (see page 71) of valid values can be defined for this rule.
Color depth	Tests the color depth (bits per sample) of the decoded video. This is usually 8, but may be higher in some standards (not available for H.263, MPEG-2 or DV25).
Frame rate	Tests the average frame rate (calculated as <frames- 1>/<duration>) of the video sequence. This check does not use any declared frame rate in the stream header. Multiple sets (see page 71) of valid values can be defined for this rule.

Check	Description
Bit rate	Tests the average bit rate of the video elementary stream, calculated as <stream_size>/<duration>. This check does not apply buffer analysis rules. Multiple sets (see page 71) of valid values can be defined for this rule.
Display Aspect Ratio	Tests the aspect ratio of the intended display dimensions of the video stream. According to the codec being used, this depends upon a combination of the indicated display aspect ratio in the stream, the indicated pixel aspect ratio, and the frame size (in pixels). Consequently, this will not necessarily correspond to the actual resulting aspect ratio on all display devices. The mechanism used for detecting the MPEG-2 display aspect ratio is documented in more detail in the section Video Checks Specific to MPEG-2 Standard (see page 84). Multiple sets (see page 71) of valid values can be defined for this rule.

Video Quality

For interlaced content, all quality checks consider each frame to contain the top field and the bottom field in a single picture. It is not possible to apply these checks on each field.

Check	Description
Black frames at start, end, or during video	These checks enforce or prohibit a certain duration of black at the beginning and end of the sequence, or to prohibit periods of black in the middle. The **Black level tolerance** field determines what luma level is considered to be black by the test. If the Black level tolerance is N, then any pixels in the bottom N % of the signal range are considered to be black. An N value of 0% corresponds to a luma value of 16 and 100% corresponds to a luma value of 235. The **Ignore failures for up to...% of picture area** parameter allows a percentage of the screen area to exceed the threshold yet for the frame to still be considered black. This is typically used to disregard small amounts of analog noise and/or channel logos.
Freeze frame sequence	This check can detect a sequence of repeated frames. The **Maximum allowed duration** parameter gives the length of a frozen sequence above which an alert will be generated. Sequences of frozen frames equal to or shorter than this duration will not lead to an alert. For example: entering "2 identical frames" will allow two consecutive identical frames to pass, but will generate an alert if three consecutive identical frames are encountered. The **Ignore monochromatic frames** option allows frames which are predominantly a single color (such as black) to be ignored and so not cause freeze frame alerts. Frames are considered "repeated" if every 16x16 block of luma samples differs by less than a given root mean square error from the corresponding block in a previous frame. The **Frames differ at ...% or more of luma range** parameter controls this sensitivity. If you are getting frozen frame alerts for sequences with significant movement, lower this value. If frozen sequences are not leading to an alert being raised when you think they should, raise this value.
Loss of Chroma	This check ensures that the video has color information. It will cause an alert if the color signal is lost (if the chroma components of the decoded video fall to zero or nearly so). The **Maximum allowed duration** parameter gives the maximum number of video frames or seconds that are permitted to be monochrome before an alert is triggered. The parameter **Ignore failures for first...at start** allows the test to skip over a certain amount at the beginning of the video stream, without generating alerts. Similarly, the **Ignore failures for last...at end** parameter skips over a given amount at the end. These parameters are typically used to skip over monochrome title and credit sequences. The **Chroma level tolerance** percentage gives the signal level below which the check will trigger an alert. 0% will alert on Cr and Cb values of 128, while 100% will alert on any value from 16 to 240. The **Ignore failures for up to...% of picture area** specifies the amount of the picture area that may contain color information without causing the check to trigger an alert. These last two parameters are typically used to disregard small amounts of analog noise and/or channel logos.

Check	Description
Letterbox and Pillarbox checks	These checks enforce a certain aspect ratio in the active picture area, or to prohibit letterboxing (or pillarboxing) altogether. If the **Disallow Letterboxing** or **Disallow Pillarboxing** check boxes are selected, the **Desired Aspect Ratio** parameters are ignored. In this case, no black bars are allowed at the top and bottom of the frame (Letterboxing) or at the left and right sides (Pillarboxing). Otherwise, this check will calculate the correct sizes of the black bars for the given aspect ratio, and trigger an alert if the video does not comply. The parameter **Ignore failures for first...at start** allows the test to skip over a certain amount at the beginning of the video stream, without generating alerts. Similarly, the **Ignore failures for last...at end** parameter skips over a given amount at the end. The **Maximum allowed duration** parameter gives the maximum number of video frames or seconds that are permitted to have improper black bars, before an alert is triggered. The **Black level tolerance** parameter specifies the luma level that the check regards as "black", with 0% corresponding to the value 16, and 100% corresponding to 235. This tolerance is typically used to disregard small amounts of analog noise in the otherwise black borders of the frame. To allow for small variations in the detected position of the black bars, the **Out-of-position tolerance** parameter specifies the number of scan lines (or pixel columns) by which a black bar may be out of place, without an alert being triggered. Two further parameters, **Black level tolerance** and **accounting for...% of picture area not black** specify a rule for skipping frames that are too dark to reliably detect the black bars. Once again, 0% corresponds to 16 and 100% corresponds to 235.
Blockiness	This is a subjective measure of video quality. Each frame is assigned a quality metric (based on compression artifacts) in the range 0-99, and a moving average is calculated to allow for brief periods of poor quality (such as fast camera pans) to be disregarded if required. An alert is generated if the video quality drops below the given threshold. The image is divided into four quadrants and blockiness measurement is recorded for each quadrant on each frame. A rolling average is calculated for a sequence of frames, and if the rolling average for one or more of the four quadrants exceeds the user-specified threshold an alert is raised. The "offending" frame reported will be the last frame in the sequence of N. Blockiness measurements will continue to be taken after an alert is raised, but another alert will not be raised until at least another N consecutively blocky frames have passed. So if you were averaging over 10 frames and your stream had contained a sequence of 22 blocky frames, you would expect an alert at frame 10 and an alert at frame 20. The blockiness score that is reported in an alert is the lowest of the four quadrants rolling average if more than one quadrant exceeds the threshold. The averaged score is rounded to the nearest integer.
Luma Limit Violation	This tests that the luma component (Y') of the Y'CbCr signal is within valid limits. The **Maximum Duration** parameter gives the maximum number of video frames or seconds that are permitted to have violations before an alert is triggered. The **Low Limit** and **High Limit** fields allow for more strict or more lenient rules for when a pixel is considered a violation. The defaults of -1% to 103% comply with EBU Tech Rec. R103-2000. These limits may be specified in mV, %, or 8 bit decimal values where values in mV or % are first converted to 8 bit decimal. For example, the ranges 0-700mV and 0-100% are converted to 16-235 decimal, similarly, -7-721mV or -1%-103% = 14-242 decimal. The **Out-of-Limits Tolerance Filter** applies a low pass filter to the video before checking the limits to remove brief limit violations that are only a small amount over the limit. The default 50% filter setting complies with EBU Tech Rec. R103-2000 and IEEE Standard 205 for SD signals. This video standard recognizes that very brief violations, which cause small dots on the video image to be out-of-limit, are not a problem in practice. The lower the percentage entered here, the less likely a brief violation is to cause an alert. Values of 64 and above are not recommended. The **Out-of-Limits Tolerance Filter** is only applied if the **Apply tolerance filter** check box is checked. The **Ignore failure...** field allows an illegal signal for a given percentage of the screen area to not cause an alert. If the area of the screen in violation is greater than this percentage, an alert will be generated.

Check	Description
RGB Component Violation	This test ensures that the Y', Cb and Cr components of the decoded video lie within the legal range given by ITU-R BT.601-5 or ITU-R BT.709-5. The **Maximum duration** parameter gives the maximum number of video frames or seconds that are permitted to have violations, before an alert is triggered. The **Colorspace Conversion** allows for the selection of the method for conversion from Y'CbCr to RGB. If **Auto** is selected, then ITU-R BT.709-5 is used if the frame has more than 1000x648 pixels, otherwise, ITU-R BT.601-5 is used. The **Low Limit** and **High Limit** fields allow for more strict or more lenient rules for when a pixel is considered a violation. The defaults of -35mV to 735mV comply with EBU Tech Rec. R103-2000. These limits may be specified in mV, % or 8 bit decimal values where values in mV or % are first converted to 8 bit decimal. For example, the ranges 0-700mV and 0-100% are converted to 16-235 decimal, similarly, -35-735mV or -5%-105% = 5-246 decimal. The **Out-of-Limits Tolerance Filter** applies a low pass filter to the video before checking the limits to remove brief limit violations that are only a small amount over the limit. The default 50% filter setting complies with EBU Tech Rec. R103-2000 and IEEE Standard 205 for SD signals. This video standard recognizes that very brief violations, which cause small dots on the video image to be out-of-limit, are not a problem in practice. The lower the percentage entered here, the less likely a brief violation is to cause an alert. Values of 64 and above are not recommended. The **Out-of-Limits Tolerance Filter** is only applied if the **Apply tolerance filter** check box is checked. The **Ignore failure...** field allows an illegal signal for a given percentage of the screen area to not cause an alert. If the area of the screen in violation is greater than this percentage, an alert will be generated.

Check	Description
PSE analysis	This rule can be used to perform Photosensitive Epilepsy (PSE) analysis. PSE analysis can result in four different kinds of failures: spatial, flash, red, and extended. Red, flash, and spatial errors indicate frames where the image content has exceeded the limits for television viewing as specified in the UK. A luminance flash failure occurs when flashing is above 3 Hz with at least 20 cd/m^2 contrast and which occupies more than 25% of the image area. The red flash is equivalent to this with the added condition that the flashing has to be to and from a saturated red (which is defined as red exceeding 80% of the total color content). A spatial failure is defined as a repeating bar-like pattern with at least 20 cd/m^2 contrast, which occupies more than 40% of the image area and contains at least 6 pairs of light-dark stripes. The extended failure is defined as flashing activity which is close to failure for more than 80% of frames in the most recent 5 seconds. You can also configure the number of lines to be cropped before sending the frame for analysis. This setting is useful when the frame contains VITC data. The number of lines to be cropped must be an even number. ***NOTE.*** *If the video contains VITC data, then the number of lines to be cropped should be same as the number of lines containing VITC data in the stream. If this is not the case, the PSE analysis results may be incorrect.* **Limitations in PSE analysis support.** Only following image formats are supported for PSE analysis: ■ YUV 422 Interleaved [UYVY and YUYV] ■ 8-bit RGB data Interleaved [RGB24] ■ 8-bit BGR data interleaved [BGR24] ■ 10-bit YUV 422 packed [UYVY] ■ YUV 420 Planar ■ YUV 422 Planar Other limitations include the following: ■ Data scan order changing from progressive to interlaced is not supported. ■ Maximum resolution supported is 1920x1200 and minimum resolution supported is 320x224. ■ Supported frame rate range is 20 fps to 60 fps. **Photosensitive Epilepsy (PSE).** Photosensitive epilepsy is a type of epilepsy in which seizures are caused by flashing or light or some visual patterns. One of the most common triggers for photosensitive epilepsy is the domestic television set. The television set doesn’t cause the photosensitive epilepsy, but watching it can and does trigger seizures in people where the condition is present even though it may be dormant. Many countries require service providers to ensure that PSE-causing content is absent in their services.

Video Checks Specific to MPEG-4 Standard

Check	Description
Profile and level	Checks whether the video conforms to the MPEG-4 Part 2 Profile and Level specified by the user.
GOVHeader	Tests whether a Group Of VOP (GOV) header exists anywhere in the stream. This test is based on detecting the group_of_vop_start_code syntax element in the stream.
Visual object sequence header	Tests whether a VisualObjectSequence() header exists anywhere in the stream. This test is based on detecting the visual_object_sequence_start_code syntax element in the stream.
Video object header	Tests whether a video_object_start_code is present in the stream.
AC prediction	Tests whether the video sequence contains any macroblocks that use AC Prediction. This test is based on detecting the ac_pred_flag syntax element.
Forward prediction	Tests whether the video sequence contains any frames that use forward motion prediction (P-VOPs, B-VOPs and S-VOPs).
Bidirectional prediction	Tests whether the video sequence contains any B-VOPS.
Quarter sample MV	Tests whether quarter sample motion compensation is used, as determined by the quarter_sample element in the VideoObjectLayer() header.
4MV block modes	Tests whether the inter4v macroblock type is ever used in a P-VOP.
Global motion compensation	Tests whether the sprite_enable element in the VideoObjectLayer() header is set to GMC. This does not test whether GMC S-VOPs are actually ever used.
Data partitioning	Tests the value of the data_partitioned element in the VideoObjectLayer() header. Macroblocks in Data partitioned streams have motion vectors coded separately from texture (DCT) information.
Resync markers	Tests for the presence of resync markers in coded VOPs, as determined by the resync_marker_disable element in the VideoObjectLayer() header.
RVLC	Tests whether Reversible Variable Length Codes are in use, as determined by the reversible_vlc element in the VideoObjectLayer() header. Reversible VLCs give greater opportunity for error correction at the expense of slightly lower coding efficiency.

Video Checks Specific to MPEG-2 Standard

Check	Description
Standard	This Template can be used to process both MPEG-2 and MPEG-1 video. If the video is MPEG-1 an alert will be raised, and this can be suppressed by selecting the checkbox. Cerify supports the decoding of MPEG-2 constrained bitstreams with Main profile or 4:2:2 profile. MPEG-1 constrained bitstreams are not fully supported and will be treated as MPEG-2 bitstreams. This can lead to various issues when processing MPEG-1 constrained bitstreams, typically including spurious alerts, but also possible picture corruption and failure to decode the stream. For a more complete description of the differences between MPEG-1 and MPEG-2 bitstreams please refer to section D.9 of the ITU-T H.262 or ISO/IEC 13818-2 specification. Since trying to process a video format which is not MPEG-1 or MPEG-2 will almost certainly lead to spurious alerts, Cerify will raise an alert and cease analysis immediately if the video is not either of these types.
Profile	Detects whether the stream conforms to the Main or 4:2:2 profile.

Check	Description
Level	Detects whether the stream conforms to the Main, High 1440 or High level, or to some level below the one specified by the user.
Display Aspect Ratio	For MPEG-2 streams the system examines the aspect_ratio_information field (see Table 6-3 in ISO/IEC 13818-2). If this value is 0010, 0011, or 0100 then this directly represents a Display Aspect Ratio and the corresponding value will be used to carry out the check. If the value is 0001 then the Sample Aspect Ratio is 1 and the Display Aspect ratio will be deduced from the frame height and width. Selecting the value "Unspecified" for this check, will check that the aspect_ratio_information field has not been set to any of the above four values.
Color Format	Tests the color sub sampling of the decoded video.
Indicated bit rate	Tests the value of the bit rate (in bits per second) indicated by the MPEG-2 bit_rate element, as given in the stream sequence header and used in VBV calculations. Only one failure of this test will be reported for any single incorrect value.
Sequence display extension	Tests for the presence or absence of an MPEG-2 sequence_display_extension following every sequence header. Every sequence header is tested, but repeated failures are not shown.
Copyright extension	This test will check that an MPEG-2 copyright_extension structure occurs at least once in the stream, and (optionally) that its contents match the given values. The **Identifier** and **Copyright Number** fields each accept values in decimal, or may be left empty if no check is to be performed. Every copyright_extension present in the stream is tested.
VBV buffer size	Tests on the value of vbv_buffer_size given in the sequence header (and sequence extension for MPEG-2). This is expressed in units of 16K (16384 bytes). Only one failure of this test will be reported for any single incorrect value.
First GOP closed	Checks that the first GOP header encountered in the stream has closed_gop set to 1. (This does not check that the first GOP header occurs at the beginning of the stream; see the **GOP Interval** check.)
GOP interval	Checks the frequency of GOP headers, expressed in terms of the number of pictures between successive headers. For example, specifying min=2 and max=2 would require a GOP header on every other picture. It is also possible to check that the first picture in the sequence is preceded by a GOP header.
CC standards	Checks for the presence/absence of closed caption standard data in the entire duration of the stream. Select one or a combination of the closed caption standards (CEA 608, CEA 708, SCTE 20, and SCTE 21). For each of the closed caption standards that you select, you can test for presence or absence.
CEA 608 services	Checks for the presence/absence of closed caption services for CEA 608. Select one or a combination of CEA 608 caption services (CC1, CC2, CC3, CC4, and T1, T2, T3, T4). For each of the services you select, you can test for presence or absence.
CEA 708 services	Checks for the presence/absence of closed caption services for CEA 708. Select one or a combination of CEA 708 caption services (Service 1, Service 2, Service 3, Service 4, Service 5, and Service 6). For each of the services you select, you can test for presence or absence.
Line number for Field 1 (SCTE 20)	Checks for the line number of the first field, where the SCTE 20 closed caption data is carried.
Line number for Field 2 (SCTE 20)	Checks for the line number of the second field, where the SCTE 20 closed caption data is carried.
Line number for Field 1 (SCTE 21)	Checks for the line number of the first field, where the SCTE 21 closed caption data is carried.

Check	Description
Line number for Field 2 (SCTE 21)	Checks for the line number of the second field, where the SCTE 21 closed caption data is carried.
Quantization	This ensures that the quantizer_scale never exceeds the user supplied values for inter and intra blocks for more than a given duration in seconds/frames. If the combined percentage of inter and intra blocks in a frame exceeding their threshold is greater than the percentage entered then that frame will fail the test. The quantizer scale can be any number in the range of 1 to 112.

Video Checks Specific to VC-1 Standard

Check	Description
Profile	Checks whether the video conforms to the Simple, Main or Advanced profile.
Sample aspect ratio	Tests the sample aspect ratio of the video stream. The sample aspect ratio is the ratio between the intended horizontal distance between the columns and the intended vertical distance between the rows of the luma sample array in a frame.
Range mapping	Tests whether the video stream makes use of range mapping in Advanced profile to scale luma and color-difference values. Every entry point header is checked. This does not test range reduction (as used in Main profile).
Loop filter	Tests whether loop filtering has been enabled for the sequence. For Advanced profile, this value is tested at each entry point header.
Intensity compensation	Tests whether any pictures in the video stream use intensity compensation.
Forward prediction	Tests whether the video sequence contains any frame types (for example, P pictures, B pictures) which use forward motion prediction.
Bidirectional prediction	Tests whether the video sequence contains any frame types (for example, B pictures) which use bidirectional motion prediction.
Quantization	This ensures that the quantizer scale (MQUANT) never exceeds the user supplied value for more than a given duration in seconds/frames. If the percentage of macroblocks in a frame exceeding the threshold is greater than the percentage entered then that frame will fail the test. The quantizer scale can be any number in the range of 1 to 31.
Dropped frames	This test ensures that the time difference between frames never exceeds the user supplied duration in seconds/frames. For inputs specified in seconds, if the gap in presentation times for consecutive frames exceeds the threshold then the later frame will fail the test. For inputs specified in frames, the most recent frame timings are used to calculate the probable intended frame rate and a frame whose timing exceeds the frame threshold will fail the test. Setting a maximum gap of one frame will give an alert for any dropped frames.

Video Checks Specific to H.264/AVC Standard

Check	Description
Profile	Checks whether the H.264/AVC level and profile match or conform to those selected by the user.
AVC-Intra restrictions	Enforces the AVC Intra restrictions as per the "SMPTE RP 2027-2007 AVC Intra-Frame Coding Specification" standard.

Check	Description
Sample aspect ratio	Tests the sample aspect ratio of the video stream. The sample aspect ratio is the ratio between the intended horizontal distance between the columns and the intended vertical distance between the rows of the luma sample array in a frame.
Entropy coding	Tests whether the entropy coding is CABAC (exclusively) or CAVLC (exclusively), as determined by the entropy_coding_mode flag in the picture parameter set(s) of the video stream.
Data partitioning	Data partitioning is used for error resilience. This rule can either check that data partitioning is used throughout the stream, or that it is never used at all.

Video Checks Specific to the DV50/100/DVCPro Standard

Check	Description
DV Profile	Checks whether the DV profile (video system) matches or conforms to that selected by the user. The Profiles show the number of lines and field rate, color sampling, and video bit rate: **1.** 525/60 4:1:1 25Mb/s **2.** 625/50 4:1:1 25Mb/s **3.** 625/50 4:2:0 25Mb/s **4.** 525/60 4:2:2 50Mb/s **5.** 625/50 4:2:2 50Mb/s **6.** 1080/60i 4:2:2 100Mb/s **7.** 1080/50i 4:2:2 100Mb/s **8.** 720/60p 4:2:2 100Mb/s **9.** 720/50p 4:2:2 100Mb/s
Field Order	This rule checks that the field dominance indicated by the coded stream and the decoded video is consistent with a “Bottom Field first” field order.
Standards body	Checks that the file conforms to either the IEC (DV) or the SMPTE (DVCPRO) standards.
Closed captions (Standard)	Checks if closed caption data is present in the first frame of the stream as defined by the IEC DV standard.
Closed captions (GVG Line 19)	Checks if alternate closed caption data is present in VAUX pack 38 throughout the stream as defined by Grass Valley for Line 19 closed caption data. If closed captions are required, it can be specified that the closed caption data must not be null (four bytes of 0x80 in the closed caption pack) for more than the supplied duration.

Video Checks Specific to the ProRes Standard

Check	Description
Profile	Checks that the video stream is one of the following formats: ■ Apple Prores 422 ■ Apple Prores 422 (HQ) ■ Apple Prores 422 (LT) ■ Apple Prores 422 (Proxy) ■ Apple Prores 4444
Display picture size	Tests the video display resolution (frame width by frame height), in pixels. The display picture size is not necessarily the same as the encoded picture size. Multiple sets of valid values can be defined for this rule.
Alpha channel	Checks for the presence of an encoded alpha channel. Cerify will ignore any Alpha channels when performing baseband checks.

Video Checks Specific to Generic QuickTime Video

The Generic QuickTime Video template uses the QuickTime Player to decode a video stream contained within a QuickTime MOV, MP4, or 3GPP container file. It does not support all of the container formats that are supported by QuickTime Player, such as AVI. Creating a Profile using this template with a container template which is not "QuickTime" or "MP4 / 3GPP" results in an error. Unlike other video templates which are specific to a particular video codec, any video stream that can be decoded by QuickTime Player can be decoded using this template. Additional video codec capability may be acquired by installing an appropriate third-party plug-in for QuickTime Player.

The stream properties returned when using this template are those reported by QuickTime, which in some circumstances might not be consistent with analogous information carried in the elementary stream.

Check	Description
QuickTime	This check causes the video stream to be decoded using the QuickTime framework rather than Cerify's internal video decoders. It also checks that the container format of the media file is QuickTime MOV, MP4, or 3GPP.
Standard	This checks that the standard of the decoded video stream matches the entered value. If you are unsure of the value to enter in this field, process a candidate media file using a Generic QuickTime Video template without the standard rule enabled and with the QuickCheck rule enabled. The standard of the video stream will be reported in the Video Info of the job result. Use this value in the standard rule to ensure that all subsequent files are of the correct video standard.

Check	Description
Display picture size	Tests the video display resolution (frame width by frame height), in pixels. The display picture size is not necessarily the same as the encoded picture size. Multiple sets of valid values can be defined for this rule.
Alpha channel	Checks for the presence of an encoded alpha channel. Cerify will ignore any Alpha channels when performing baseband checks.

NOTE. *When using the Generic QuickTime Video template, it generally results in significant performance gains over other video template types as it uses multi-core processors and no syntax checking.*

For example, H.264 decoding is approximately five times faster.

Video Checks Specific to JPEG 2000

The JPEG 2000 Video template uses the QuickTime Player to decode JPEG 2000 video streams contained within a QuickTime MOV, MP4, or 3GPP container file. It does not support all of the container formats that are supported by QuickTime Player, such as AVI. Creating a Profile using this template with a container template which is not "QuickTime" or "MP4 / 3GPP" results in an error. The stream properties returned when using this template are those reported by QuickTime, which in some circumstances might not be consistent with analogous information carried in the elementary stream.

Check	Description
QuickTime	This check causes the video stream to be decoded using the QuickTime framework rather than Cerify's internal video decoders. It also checks that the container format of the media file is QuickTime MOV, MP4, or 3GPP.
Display picture size	Tests the video display resolution (frame width by frame height), in pixels. The display picture size is not necessarily the same as the encoded picture size. Multiple sets of valid values can be defined for this rule.
Alpha channel	Checks for the presence of an encoded alpha channel. Cerify will ignore any Alpha channels when performing baseband checks.

NOTE. *When using the JPEG 2000 template, syntax checking is not supported.*

Audio Templates

Audio Templates collect together rules applying to audio elementary streams.

Common Audio Configuration Checks

Check	Description
Standard	Checks that the input file is encoded to the expected standard. This check is mandatory and cannot be disabled. Because improper handling of an audio format file, such as processing PCM as AAC, will almost certainly lead to spurious alerts, Cerify will raise an alert and cease analysis immediately in the event of a mismatch between observed and expected audio format. If the media file does not contain an audio stream, an alert will be raised and processing will terminate immediately.
Track	You can choose the track using either Track Index or Track Id (Identity). **Track Index**: Specifies the index of the audio track that is to be processed. The index is relative to the natural ordering of the audio tracks within the container layer, such as PIDs for MPEG-2 Transport Streams. The index only takes in to account the tracks using the codec of the current audio template. If the rule is not used, the first audio stream found of the appropriate codec type is processed. For example, for an MPEG-2 Transport stream containing two MPEG-1 Audio streams and one Dolby Digital stream, in order to process the first MPEG-1 Audio stream, a track index of 0 should be specified and in order to process the second MPEG-1 Audio stream, a track Index of 1 should be specified. To process the Dolby Digital stream, the rule is not required since there is only one Dolby Digital stream. **Track Id**: Specifies the identity of the audio track that is to be processed. The track id value used will depend on the id used to identify the audio track in the container. The following table gives the values used in the track id field for different containers. MOV/MP4/3GPP – Track ID of the audio track MPEG-2 PS – Stream id of the audio track MPEG-2 TS – PID of the audio track MXF – Track ID of the audio track ASF – Stream number of the audio track GXF – Track ID of the audio track You can also specify multiple tracks to be processed in a single template. Track indexes and Track Ids can be in either decimal or hexadecimal format; hexadecimal indexes must be preceded by '0X'. You can use the following formats to specify multiple tracks: a–b a–b,c a,b–c a–b,c–d a,b,c,d * (This applies to all the track in that standard) –1 (Default track. The result of processing will be similar to the case where the rule for choosing track id or track index is not selected)
Syntax checks	Enables strict testing for compliance to the detected standard. This will generate alerts for corrupted streams, and streams generated by misconfigured or noncompliant encoders. Each type of syntax alert has a numeric ID which is shown in the Alert Details page.
Suppress Alerts	Alerts can be suppressed individually by entering the alert ID into the text field titled **Suppress alert IDs**. Note that fatal alerts can never be suppressed. Suppressed alerts will not count toward any of the alert limits set by the **Alert limit** or **Individual Alert limit**.

Check	Description
Alert limit	This rule limits the number of audio alerts raised. It is not possible to switch off this check; however the value can be set to a maximum of 10,000. Clicking the "Terminate processing if limit is exceeded" checkbox causes file processing to stop if the alert limit is exceeded. In this case certain stream properties that require the whole file to be processed (such as length of stream) are not reported. Similarly, end of stream test cases will not be executed. If the checkbox is not selected, processing will proceed to completion but any further audio alerts will be suppressed and not shown to the user. In either case an alert will be raised indicating that further alerts have been suppressed. If the alert limit has been exceeded, fatal alerts will still be displayed. Note that the **Individual Alert limit** can be used to prevent the results being swamped by a particular audio alert.
Individual Alert limit	This rule limits the number of audio alerts with the same ID number. This prevents the results being swamped by a particular audio alert. It is not possible to switch off this check; however, the value can be set to a maximum of 10,000. This value should be kept lower than the **Alert limit** value, since the latter takes precedence.
Sample rate	This tests the sample rate of decoded audio. It is independent of the number of channels, so for example if you are expecting 48 kHz 2-channel audio then you need to enter 48000 here. Multiple sets (see page 71) of valid values can be defined for this rule.
Number of channels	This tests how many audio channels are present in the decoded audio elementary stream (the system only decodes one audio elementary stream at a time). For example: even if there are 3 audio elementary streams in a transport stream (each with 2-channel audio), the system will only decode one of the three streams; therefore, this test will see only 2 channels. Multiple sets (see page 71) of valid values can be defined for this rule.
Play time	This tests the length, in seconds, of the decoded audio stream. Multiple sets (see page 71) of valid values can be defined for this rule.
Bit rate	Tests the average bit rate of the audio elementary stream, calculated as <stream_size>/<duration>. Multiple sets (see page 71) of valid values can be defined for this rule.

Audio Quality Checks

Check	Description
Ignore alerts for null tracks	This rule is used to ignore the audio quality alerts when there is no data in the track.
Channel mapping	This rule is used to map individual channels to their respective channel types (L, R, C, etc.).
Silence at start, end, or during video	These checks require or disallow a period of silence at the beginning and end of the audio sequence, or to disallow periods of silence in the middle. Silence detection can be enabled or disabled on a per-channel basis. No alerts will be raised if silence detection is requested for a channel that does not exist (the "number of channels" test can be used in conjunction if necessary to detect missing channels). Cerify analyzes the decoded audio stream for a given channel and tests each sample, deciding whether or not the sample is silent. Cerify considers a sample to be silent if: ■ The sample value differs from the previous sample by less than 0.5% of the sample range OR ■ The sample value difference from the last non-silent sample by less than 0.5% of the sample range

Check	Description
Mute at start, end, or during video	These checks enforce or prohibit a certain period of digital audio muting at the beginning and end of the sequence, or to prohibit periods of muted audio in the middle. Mute detection can be enabled or disabled on a per-channel basis. No alerts will be raised if mute detection is requested for a channel that does not exist (use in conjunction with the "number of channels" test if necessary). A sample is considered muted if its value is zero. Duration may be expressed in seconds, video frames or audio frames. The latter will only be useful if the duration of an audio frame is known beforehand.
Peak level maximum	This test ensures that the peak level in the stream does not exceed a given maximum level. The level may be expressed in linear terms (from 0.0 to 1.0) or in dBFS (decibels full scale: any negative value, where 0.0 represents the maximum sample value). Peak level tests can be enabled or disabled on a per-channel basis. Alerts generated by this test represent instantaneous violations, so their start and end times are the same. This test can be configured as either “Peak Level” test or “True Peak Level” test. When “True Peak Level” test is selected, the input stream is over-sampled appropriately (depending on the sampling rate), before testing it for peak.
Peak level minimum	This test ensures that the peak level in the stream reaches a given minimum level. The level may be expressed in linear terms (from 0.0 to 1.0) or in dBFS (decibels full scale: any negative value, where 0.0 represents the maximum sample value). Peak level tests can be enabled or disabled on a per-channel basis. This test can be configured as either “Peak Level” test or “True Peak Level” test.
PPM level maximum	This test ensures that the PPM audio ballistics level in the stream does not exceed a given maximum level. This test is based on the IEC-60268-10 standard for Peak Programme Meter (PPM) Audio Ballistic measurements. The level may be expressed in linear terms (from 0.0 to 1.0) or in dBFS (decibels full scale: any negative value, where 0.0 represents the maximum sample value). PPM level tests can be enabled or disabled on a per-channel basis. Alerts generated by this test represent periods of violations, with the start and end times. Sometimes the alerts generated by this test represent instantaneous violations, so their start and end times are the same. This test can be configured as one of the following: ■ PPM Type 1: integration time of 5 ms, return time of 20 dB in 1.7 s ±0.3 s ■ PPM Type 2: integration time of 10 ms, return time of 24 dB in 2.8 s ±0.3 s
PPM level minimum	This test ensures that the PPM audio ballistics level in the stream reaches a given minimum level. The level may be expressed in linear terms (from 0.0 to 1.0) or in dBFS (decibels full scale: any negative value, where 0.0 represents the maximum sample value). PPM level tests can be enabled or disabled on a per-channel basis. This test can be configured as one of the following: ■ PPM Type 1: integration time of 5 ms, return time of 20 dB in 1.7 s ±0.3 s ■ PPM Type 2: integration time of 10 ms, return time of 24 dB in 2.8 s ±0.3 s

Check	Description
ATSC long loudness	ATSC Long Loudness is a running average loudness for the user-selected channels over the entire stream. The average is computed for each audio sample in the stream. This test measures the long audio loudness in the stream according to the ITU-R BS.1770-2 standard and ensures that the long loudness level in the stream does not go beyond the specified minimum and maximum threshold levels. The loudness levels are expressed in LKFS units (Loudness, K weighted, relative to nominal scale). The range for both maximum and minimum threshold levels is from -60 LKFS to 0 LKFS. Loudness is measured and averaged over the selected channels. Alerts generated by this test represent periods of violations, with start and end times. Sometimes the alerts might represent instantaneous violations, so their start and end times are the same. Multiple sets of valid values can be defined for this rule. By defining multiple sets of values for this rule, you can define different minimum and maximum threshold levels for different group of channels. (See also Multiple Sets of Values (see page 71).)
EBU R128 loudness	The EBU R128 Gated Loudness measurements are performed according to the gating procedure listed in the ITU-R BS.1770-2 standard. The EBU R128 Gated Loudness measurements can be performed by selecting either “EBU R128 Loudness with Absolute Gate (-70 LUFS)” or “EBU R128 Loudness with Relative Gate (-10 LUFS)”. In the case of gated loudness measurement, alerts are generated if the momentary loudness is out of the range specified by the minimum and maximum thresholds. The loudness levels are expressed in LUFS units (Loudness Unit, referenced to Full Scale). The range for both maximum and minimum threshold levels is from -60 LKFS to 0 LKFS. Loudness is measured and averaged over the selected channels. Alerts generated by this test represent periods of violations, with start and end times. Sometimes the alerts might represent instantaneous violations, so their start and end times are the same. The “Loudness Range (LRA)” value quantifies the variation in a time-varying loudness measurement. LRA is measured in LU (Loudness Unit) units. Multiple sets of valid values can be defined for this rule. By defining multiple sets of values for this rule, you can define different minimum and maximum threshold levels for different group of channels. (See also Multiple Sets of Values (see page 71).)
Standard short loudness	Short loudness is the sliding-window average loudness for the user-selected channels. The average is computed for all audio samples in the sliding window, according to the ITU-R BS.1770-2 standard. The short loudness measurement per the ATSC standard can be performed by selecting “ATSC (A/85) Short Loudness (10 sec),” where the sliding-window duration is 10 seconds. The short loudness measurement per the EBU R128 standard can be performed by selecting “EBU R128 Short Loudness (3 sec)," where the sliding-window duration is 3 seconds. This test measures the short audio loudness (as per ATSC or EBU R128 standard) in the stream and ensures that the short loudness level in the stream does not go beyond specified minimum and maximum levels. The loudness levels are expressed in LKFS units (Loudness, K weighted, relative to nominal scale) in the case of ATSC standard, and LUFS units (Loudness Unit, referenced to Full Scale) in the case of EBU R128 standard. The range for both maximum and minimum threshold levels is from -60 LKFS/LUFS to 0 LKFS/LUFS. Alerts generated by this test represent periods of violations, with the start and end times. Sometimes the alerts might represent instantaneous violations, so their start and end times are same. Multiple sets of valid values can be defined for this rule. By defining multiple sets of values for this rule, you can define different threshold levels and window duration for different group of channels. (See also Multiple Sets of Values (see page 71).)

Check	Description
Custom short loudness	Short loudness is the sliding-window average loudness for the user-selected channels. The average is computed for all audio samples in the sliding window, according to the ITU-R BS.1770-2 standard. The sliding window duration is user configurable. This test measures the short audio loudness in the stream and ensures that the short loudness level in the stream does not go beyond specified minimum and maximum levels. The loudness levels are expressed in LUFS units (Loudness Unit, referenced to Full Scale). The range for both maximum and minimum threshold levels is from -60 LUFS to 0 LUFS. The range for the sliding window duration is 0.5 seconds to 30 seconds. Alerts generated by this test represent periods of violations, with the start and end times. Sometimes the alerts might represent instantaneous violations, so their start and end times are same. Multiple sets of valid values can be defined for this rule. By defining multiple sets of values for this rule, you can define different threshold levels and window duration for different group of channels. (See also Multiple Sets of Values (see page 71).)
Clipping	This test detects audio clipping, as defined by a run of successive samples whose value is very similar but non-silent. This definition permits the detection of clipping at non-peak values (which is possible if the audio has been processed since the original clipping occurred). This test can be configured to ignore occasional clips; a threshold frequency must be given, below which alerts will not be generated. Clipping tests can be enabled or disabled on a per-channel basis.
Test tone at start and end	These checks enforce or prohibit a period of a single frequency tone at the beginning and end of the sequence. Test tone checks can be enabled or disabled on a per-channel basis. If the test is prohibiting a test tone, then the duration field specifies a maximum duration (this will typically be 0). If the test is enforcing a test tone, then the duration is a minimum length. Duration can be expressed in seconds, video frames or audio frames. The latter will only be useful if the duration of an audio frame is known beforehand.

Audio Checks Specific to MPEG1 and MPEG-2 Audio Standards

Check	Description
Standard	A single Template is used to check MPEG-1 and MPEG-2 part 3 standard audio streams since they are so closely related. If the user needs to explicitly check that the audio stream conforms to just one of these standard, this check can be used. Since trying to process an audio format that is not MPEG-1 or MPEG-2 will almost certainly lead to spurious alerts, Cerify will raise an alert and cease analysis immediately if the audio is not either of these types. If the media file does not contain an audio stream, an alert will be raised and processing will terminate immediately.
Layer	Used to check whether this is a Layer I or Layer II audio stream.
Error protection	This tests for the presence or absence of error protection. This corresponds to the protection_bit element in the first audio frame header.
Stereo Coding	This tests that a given stereo coding mode is (or is not) used in the first audio frame header.
Variable bit rate	This tests whether the value of the bit_rate_index element ever varies over the course of the stream.

Audio Checks Specific to Dolby-E Audio Standard

Check	Description
CRC and continuity checks	This rule checks the CRCs of each Dolby-E frame, and generates an alert whenever a corrupt segment is found. This rule also generates an alert if the frame rate, bit depth or program configuration vary mid-stream, as this is usually undesirable (although technically possible.)
Startcode search	This rule controls how much of a PCM stream will be scanned for SMPTE 337M startcodes (which are required for Dolby-E transport). When the system layer does not explicitly mark an audio stream as Dolby-E, then this parameter must be set high enough to include the beginning of the Dolby-E data. For example, if a stream has 10 seconds of PCM silence before the Dolby-E begins, then this value should be set slightly higher - 12 seconds would be suitable. ■ The consequence of setting this value too low is that Dolby-E streams may be processed as PCM. ■ The consequence of setting this value too high is that streams may take a long time to begin processing as the startcode scanning takes place.
Audio frame rate	This tests the frame rate of a Dolby-E stream. The value which is reported and tested is the value found in the first frame of the Dolby-E audio stream. If the "CRC and continuity checks" rule is enabled, a warning will be generated if subsequent frames have different frame rates.

Check	Description
Program configuration	This rule tests the program configuration (sometimes called "program sequence") of a Dolby-E stream. The program configuration determines the number of coded channels present, and groups them into logical "programs". The value which is reported and tested is the value found in the first frame of the Dolby-E audio stream. If the "CRC and continuity checks" rule is enabled, a warning will be generated if subsequent frames have different program configurations.
Payload bit depth	This rule tests the bit depth (bits per word) of a Dolby-E stream. Although this is usually the bit-depth of the enclosing SMPTE 337M stream, this does not have to be the case. The value which is reported and tested is the value found in the first frame of the Dolby-E audio stream. If the "CRC and continuity checks" rule is enabled, a warning will be generated if subsequent frames have different bit depths.

Audio Checks Specific to AC-3 Audio Standard

Check	Description
Channel configuration	This controls which channels are output by the AC-3 decoder. The stereo output mode may be either stereo or Dolby Surround compatible. Dual mono is always reproduced as stereo. If this option is not enabled, the decoder will select a channel configuration matching that of the audio coding mode of the first frame of the stream.
Nominal bit rate	This tests the nominal bit rate of an AC-3 stream as derived from Table 5.13 ("Frame Size Code Table") of the ATSC A/52 standard "Digital Audio Compression Standard (AC-3)".
Audio coding mode	This tests the audio coding mode of an AC-3 stream as derived from Table 5.3 ("Audio Coding Mode Table") of the ATSC A/52 standard "Digital Audio Compression Standard (AC-3)".
Low frequency effects channel	This tests whether or not the low frequency effects channel is present in the encoded stream.

Audio Checks Specific to AAC Audio Standard

Check	Description
Profile	Checks whether the stream AAC profile (if MPEG-2) or Audio Object Type (if MPEG-4) can be decoded by a decoder of the given profile. MPEG-2 Main profile decoders can decode Main profile and LC profile streams. ■ MPEG-2 LC profile decoders can only decode LC profile streams. ■ MPEG-4 AAC profile decoders can only decode streams using the "AAC LC" audio object type. ■ MPEG-4 High Efficiency AAC profile decoders can decode streams using either the "AAC LC" or "SBR" audio object types.
SBR information	Checks whether the stream contains SBR (Spectral Band Replication) information. This is used to check for HE-AAC streams.

Audio Checks Specific to PCM Audio Standard

Check	Description
PCM type	Tests the PCM type. RIFF (also known as Wave or .wav) is little-endian byte-aligned PCM. It is also used to refer to little-endian samples inside, or referenced by, MP4 and QuickTime files ("sowt", "ni24" and "ni32" atom types). ■ AIFF is big-endian byte-aligned PCM. It is also used to refer to big-endian samples inside, or referenced by, MP4 and QuickTime files ("twos", "in24" and "in32" atom types). ■ 8-Channel AES3 is specified in SMPTE 331M chapter 6, and is the audio type used in the D10 format. Although 8 channels are always physically present in the stream, they may not all contain valid data. In the case of 8-Channel AES3, the Number of channels test refers to the number of channels containing valid data. ■ MXF AES is AES3 audio data in an MXF file. It is little-endian byte-aligned PCM, as described in SMPTE 382M. ■ MXF BWF is Broadcast Wave audio data in an MXF file. It is little-endian byte-aligned PCM, as described in SMPTE 382M. ■ Pinnacle is the type of uncompressed audio used in Pinnacle-augmented MPEG-2 Program Streams. It uses packed, big-endian samples. ■ GXF is the type of uncompressed audio used in the SMPTE 360M / GXF file format. It is little-endian and byte-aligned. ■ DVD LPCM is the DVD standard for carrying LPCM audio inside MPEG-2 PS audio sub-streams. It uses packed, big-endian samples. To further distinguish between these types, use the **Sample depth** and **Byte order** checks.
Sample depth	Tests the number of significant bits in each audio sample. This not necessarily equal to the number of bits per sample stored in the stream.
Byte order	Tests whether the PCM audio format is big endian (Most Significant Bit first) or little endian (Least Significant Bit first).

Audio Checks Specific to DV Audio Standard

Check	Description
Locked	Checks if the audio stream is "Locked" to a constant sample rate. SMPTE (DVCPRO) audio streams are always Locked, but IEC DV audio streams may be Locked or Unlocked. If Unlocked, the sample rate may vary between limits prescribed in the standard.
Sample rate	This tests the nominal sample rate of decoded audio as reported by the stream. This might differ slightly from the actual rate for Unlocked streams.
Sample depth	Tests the number of significant bits in each audio sample. This not necessarily equal to the number of bits per sample stored in the stream.

Audio Checks Specific to Cross Track Audio

The Cross Track Audio template is used to configure audio loudness tests across specified channels of different audio tracks in a stream. This template allows the user to configure channel mapping, where you can configure the channel type (for example: L, R, C, LFE, Ls, Rs, etc.) for each channel of a track. If you want to configure multiple cross-track loudness tests, then you need to define multiple templates of type “Cross Track Audio” and include all of the cross track audio templates for the profile used to process the stream.

The cross track audio template will be useful in some audio stream formats where an asset may have multiple audio tracks and channels of more than one track constitute a single audio track in the resulting audio program. For example, for a XDCam file with 8 BWF tracks, each of the tracks contain one audio channel, where two tracks may correspond to left and right of a stereo program and the remaining six tracks may constitute a 5.1 program. Note that the properties (sampling rate, sample size, etc.) of audio streams should be similar if you want to include them in a single loudness measurement.

Check	Description
Channel mapping	This rule maps the channels of different tracks to channel type. The channel type can be any of the following: ■ Left Front (LF) ■ Right Front (RF) ■ Center Front (CF) ■ Low Frequency (LFE/Sub) ■ Left Surround (Ls) ■ Right Surround (Rs) ■ Rear Surround (Cs) ■ Left Center Front (Lc) ■ Right Center Front (Rc) ■ Left Outside Front ■ Right Outside Front ■ Left (L) ■ Right (R) ■ Center (C) ■ Mono
ATSC long loudness	ATSC Long Loudness is a running average loudness for the user-selected channels over the entire stream. The average is computed for each audio sample in the stream. This test measures the long audio loudness in the stream according to the ITU-R BS.1770-2 standard and ensures that the long loudness level in the stream does not go beyond the specified minimum and maximum threshold levels. The loudness levels are expressed in LKFS units (Loudness, K weighted, relative to nominal scale). The range for both maximum and minimum threshold levels is from -60 LKFS to 0 LKFS. Loudness is measured and averaged over the selected channels. Alerts generated by this test represent periods of violations, with start and end times. Sometimes the alerts might represent instantaneous violations, so their start and end times are the same.
EBU R128 loudness	The EBU R128 Gated Loudness measurements are performed according to the gating procedure listed in the ITU-R BS.1770-2 standard. The EBU R128 Gated Loudness measurements can be performed by selecting either “EBU R128 Loudness with Absolute Gate (-70 LUFS)” or “EBU R128 Loudness with Relative Gate (-10 LUFS)”. In the case of gated loudness measurement, alerts are generated if the momentary loudness is out of the range specified by the minimum and maximum thresholds. The loudness levels are expressed in LUFS units (Loudness Unit, referenced to Full Scale). The range for both maximum and minimum threshold levels is from -60 LKFS to 0 LKFS. Loudness is measured and averaged over the selected channels. Alerts generated by this test represent periods of violations, with start and end times. Sometimes the alerts might represent instantaneous violations, so their start and end times are the same. The “Loudness Range (LRA)” value quantifies the variation in a time-varying loudness measurement. LRA is measured in LU (Loudness Unit) units.

Check	Description
Standard short loudness	Short loudness is the sliding-window average loudness for the user-selected channels. The average is computed for all audio samples in the sliding window, according to the ITU-R BS.1770-2 standard. The short loudness measurement per the ATSC standard can be performed by selecting “ATSC (A/85) Short Loudness (10 sec),” where the sliding-window duration is 10 seconds. The short loudness measurement per the EBU R128 standard can be performed by selecting “EBU R128 Short Loudness (3 sec)," where the sliding-window duration is 3 seconds. This test measures the short audio loudness (as per ATSC or EBU R128 standard) in the stream and ensures that the short loudness level in the stream does not go beyond specified minimum and maximum levels. The loudness levels are expressed in LKFS units (Loudness, K weighted, relative to nominal scale) in the case of ATSC standard, and LUFS units (Loudness Unit, referenced to Full Scale) in the case of EBU R128 standard. The range for both maximum and minimum threshold levels is from -60 LKFS/LUFS to 0 LKFS/LUFS. Alerts generated by this test represent periods of violations, with the start and end times. Sometimes the alerts might represent instantaneous violations, so their start and end times are same.
Custom short loudness	Short loudness is the sliding-window average loudness for the user-selected channels. The average is computed for all audio samples in the sliding window, according to the ITU-R BS.1770-2 standard. The sliding window duration is user configurable. This test measures the short audio loudness in the stream and ensures that the short loudness level in the stream does not go beyond specified minimum and maximum levels. The loudness levels are expressed in LUFS units (Loudness Unit, referenced to Full Scale). The range for both maximum and minimum threshold levels is from -60 LUFS to 0 LUFS. The range for the sliding window duration is 0.5 seconds to 30 seconds. Alerts generated by this test represent periods of violations, with the start and end times. Sometimes the alerts might represent instantaneous violations, so their start and end times are same.

Action Templates

Action Templates collect together actions to take when events occur. Typically, these events are related to Job processing (see page 53).

Table 1: Action Template rules

Event	Action	Description
On start	E-mail	Send user(s) an e-mail when a Job (see page 53) starts, when a media file starts getting processed, or on both events.
On start	E-mail Report	Write an e-mail file containing a Report (see page 110) to the reports directory (see page 119) when a Job (see page 53) starts, when a media file starts getting processed, or on both events.
On start	XML Report	Generate a report in XML format and store it in the reports directory (see page 119) when a Job (see page 53) starts, when a media file starts getting processed, or on both events. More information about the XML format and the schema is given in the CeriTalk XML Reports (see page 205) section in the appendix.
On start	Execute Script	Run a script when a media file starts getting processed. For conditions governing the use of this rule, refer step 1 in the Handling Action Template Events (see page 102) section.

Table 1: Action Template rules (cont.)

Event	Action	Description
On error	E-mail	Send user(s) an e-mail when a Job (see page 53) or a media file fails with error status, or on both events.
On error	Email Report	Write an e-mail file containing a Report (see page 110) to the reports directory (see page 119) when a Job (see page 53) or a media file fails with error status, or on both events.
On error	XML Report	Generate a report in XML format and store it in the reports directory (see page 119) when a Job (see page 53) or a media file fails with error status or on both events. More information about the XML format and the schema is given in the CeriTalk XML Reports (see page 205) section in the appendix.
On error	Copy file	Copy media files which fail with error status to a network location, specifying whether the original file should be deleted. For conditions governing this rule, refer step 2 in the Handling Action Template Events (see page 102) section.
On error	Move file	Move media files that fail to a different location on the remote server without transferring the media file via the Cerify unit. If the force overwrite... option is not checked, the system will abort the move if a file with the same name as the media file being moved exists in the destination folder. When checked, this option causes the system to attempt to force the move by first deleting the file in the destination folder. For conditions governing this rule, refer step 3 in the Handling Action Template Events (see page 102) section.
On error	Execute Script	Run a script when a media file fails with error status. For conditions governing this rule, refer step 1 in the Handling Action Template Events (see page 102) section.
On success	E-mail	Send user(s) an e-mail when a Job (see page 53) or a media file succeeds, or on both events.
On success	E-mail Report	Write an e-mail file containing a Report (see page 110) to the reports directory (see page 119) when a Job (see page 53) or a media file succeeds, or on both events.
On success	XML Report	Generate a report in XML format and store it in the reports directory (see page 119) when a Job (see page 53) or a media file succeeds, or on both events. More information about the XML format and the schema is given in the CeriTalk XML Reports (see page 205) section in the appendix.
On success	Copy file	Copy Job media files which succeed to a network location, specifying whether the original file should be deleted. For conditions governing this rule, refer step 2 in the Handling Action Template Events (see page 102) section.
On success	Move file	Move media files that fail to a different location on the same remote server without transferring the Media File via the Cerify system. If the **force Overwrite** option is not checked, the system will abort the move if a file with the same name as the media file being moved exists in the destination folder. When checked, this option causes the system to attempt to force the move by first deleting the file in the destination folder. For conditions governing this rule, refer step 3 in the Handling Action Template Events (see page 102) section.
On success	Execute Script	Run a script when a media file succeeds. For conditions governing this rule, refer step 1 in the Handling Action Template Events (see page 102) section.

Handling Action Template Events

Following are some of the considerations that need to be followed when any of the events fail or succeed:

1. Scripts being run as part of an Action Template are automatically passed the following parameters:

   - URL of the file processed.
   - Username used to access the file. This may be blank if no username was provided when setting the MediaLocation that contains this file.
   - Password used to access the file. This may be blank if no username was provided when setting the MediaLocation that contains this file.
   - Path to the generated XML Report. This XML Report is generated before running the script, and will be deleted once the script has run. This parameter may be blank if the XML Report could not be generated.

     These parameters are always passed in the order listed above.

     In addition to these default parameters, it is possible to pass additional parameters to the scripts. To do this, enter one parameter per line in the Parameters text box when setting up the Template. These values will be passed in to the script, in the same order as they appear in the Web UI. This can be used, for example, to pass in locations to move files to, or characters to be used when renaming the file. If the box is left empty, no additional parameters will be given to the script. To pass an empty additional parameter to the script, insert a blank line in the box. For example, if the box contains:

     - Parameter 1
     - (Empty line)
     - Parameter 3

   Then the script will receive the additional parameters "Parameter 1", "", "Parameter 3".

   The script output will be logged to`/opt/cerify/user_scripts/user_scripts.log` on the Cerify unit. This log file may be useful when diagnosing issues with the scripts.

   Some sample scripts are available in `/opt/cerify/action_scripts`. The purpose of the scripts and a description of the parameters taken by each of them are detailed in the README.txt file available at this location.

2. For video servers that store assets using directories (for example, Pinnacle servers), or referenced formats (for example, QuickTime MOV files), it is not possible to copy, move, or delete the entire media clip asset with this method. Use another method to copy and delete this type of asset after processing.

3. Following conditions govern the use of the **Move File** rule:
   - The destination directory should already exist.
   - The destination directory must be accessible using the same user and password credentials used to access the original media file.
   - If a media file references other essence files as is possible for some types of MXF and Quick Time files these essence files will not be moved.
   - The file move will raise an alert if:
     - The GVG or FTP protocol is used.
     - The target directory does not exist.
     - The target directory and original media file URLs do not reside on the same server.
     - The user does not have write permission for the original media file (normal Cerify processing only requires read permission) or the target directory.
     - The CIFS and NFS server and client are not configured to allow file renames.
     - A file with the same name as the media file being moved exists in the destination directory and the user does not have sufficient permissions to overwrite it.
4. E-mail addresses should be entered in the text input field of the form. To specify more than one user, enter a comma-separated list of e-mail addresses. Network locations are entered by providing a URL, together with username and password credentials to access this URL. These URLs should take the same form as the URL username and password that are entered when setting up a MediaLocation.

NOTE. *The files are only deleted from their original location if the copy action succeeds.*

⚠ **CAUTION.** *The system can only send e-mails if the administrator has configured Mail Settings (see page 117). E-mail Reports, however, are written as `*.eml` files to the reports directory (see page 119) (which must have been set up by the administrator (see page 111)) and addressed to the specified user(s).*

MediaSets

The MediaSets page is accessed by selecting the **MediaSets** button from the navigation bar. On entering this page, the user is presented with a table (see page 35) of MediaSets filtered according to the current MediaSet view (Active, Archived or All (see page 34)). The **New MediaSet** button at the bottom of the main body of the page allows the user to start creating a new MediaSet.

⚠ **CAUTION.** *MediaSets cannot be created until one or more MediaLocations (see page 113) have been set up by the administrator (see page 111). If no MediaLocation have been set up, then any attempt to create a MediaSet will generate a work flow error (see page 38).*

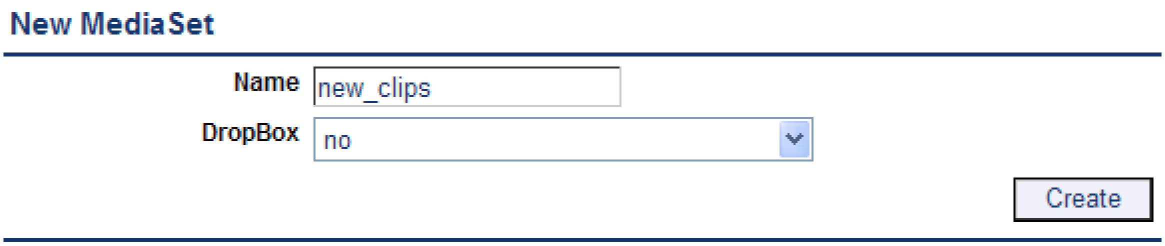
The Archive/Restore control (see page 34) on this page can be used to:

- **Archive**, **Restore from archive**. Used to remove from view or restore to view the selected MediaSets.
- **Delete**. Delete the selected MediaSets from the database. Use the archive functionality to remove the MediaSet from view, but be able to revisit/restore in future. Deletion of MediaSets that are used by Active/Archived Jobs is not allowed.

New MediaSet

The New MediaSet page is a simple form prompting the user to enter a name for the MediaSet and to select which type of MediaSet should be created.

MediaSet types	Description
Dynamic (DropBox)	A dynamic MediaSet (also known as a **DropBox**) is a directory selected from one of the available MediaLocations (see page 113) that will be monitored for content. If a Job (see page 53) is associated with a DropBox, every time a new video file appears in the DropBox directory, it will be processed. Once created, a DropBox cannot be edited, though it can be archived or deleted.
Static	A static MediaSet is a fixed collection of files selected from one or more of the available MediaLocations (see page 113). Once created it can be edited, if required.



Name: new_clips

DropBox: no

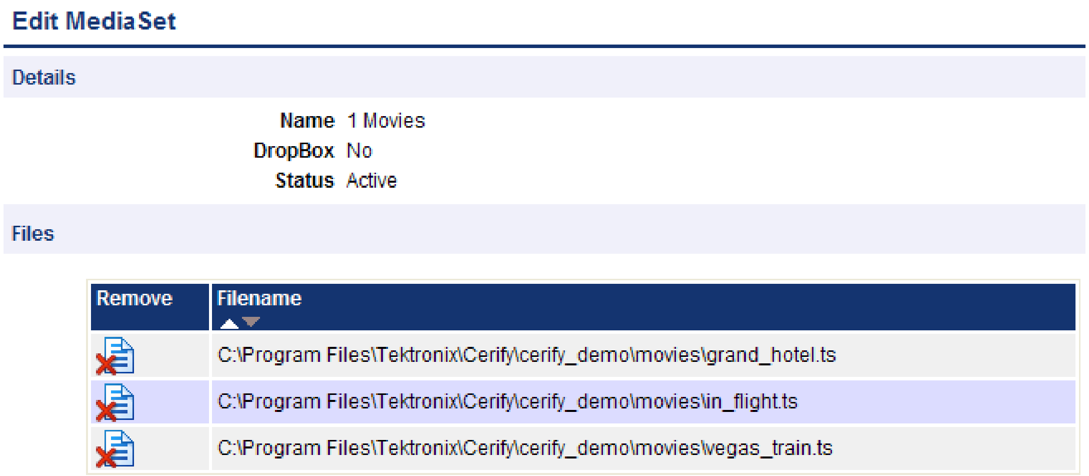
Create new MediaSet

Click the **Create** button to create the new MediaSet. You will be taken to either the Edit MediaSet page (see page 105) or the Configure DropBox page (see page 106), depending on whether or not the MediaSet is a DropBox.

Edit MediaSet

The Edit MediaSet page tabulates the media files in a static MediaSet, and provides both a file browser and text entry field to update this MediaSet.

Remove files from the static MediaSet by clicking the delete icon (☒) .



Edit MediaSet

Details

Name 1 Movies
DropBox No
Status Active

Files

Remove	Filename
☒	C:\Program Files\Tektronix\Cerify\cerify_demo\movies\grand_hotel.ts
☒	C:\Program Files\Tektronix\Cerify\cerify_demo\movies\in_flight.ts
☒	C:\Program Files\Tektronix\Cerify\cerify_demo\movies\vegas_train.ts

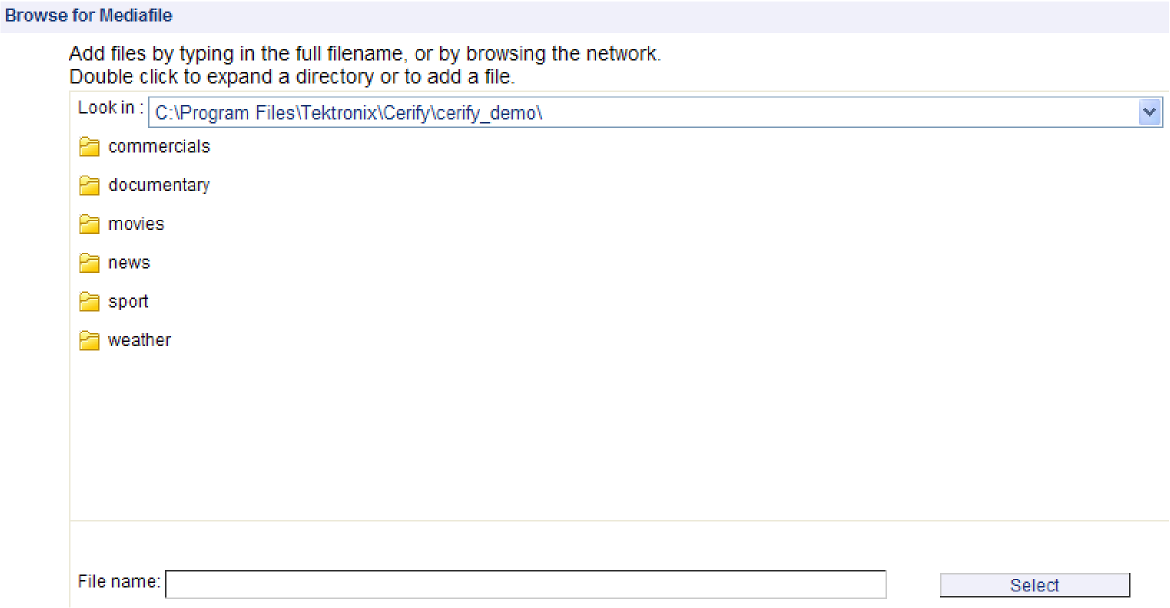
Files in a static MediaSet

Add files to the static MediaSet using the directory and file browser. Firstly, select the MediaLocation that contains the files to be added to this MediaSet.

The file browser shows the directories 📁 and files 🗎 in the MediaLocation and directory that is currently selected. To close the current directory and go up a level, open the drop down menu control at the top of the file browser. This provides a selection of recent directories. To add a file to the MediaSet, double-click on the 🗎 file icon. It will get added to the **Files** table.

Alternatively, you can enter a path to the file directly into the **File name** text field at the foot of the page and press the **Select** button. This path must be relative to the directory currently being browsed.

Only 10 files or directories are listed at a time. Click the **Next** and **Prev** links, or use your mouse, to see other files in larger directories.



Browse for Mediafile

Add files by typing in the full filename, or by browsing the network.
Double click to expand a directory or to add a file.

Look in : C:\Program Files\Tektronix\Cerify\cerify_demo\

- commercials
- documentary
- movies
- news
- sport
- weather

File name:

The MediaSet file browser

Configure DropBox

To configure a DropBox, select a DropBox Mode and a DropBox Path.

A DropBox Mode is a predefined set of filters (see page 109). Edit any of the DropBox Filters (see page 109) to create a Custom DropBox Mode.

DropBox modes	Description
Standard	Monitor media files in the top-level of the DropBox.
Only M2V	Only monitor files with a `m2v` extension in the top-level of the DropBox.
Only MOV	Only monitor files with a `mov` extension in the top-level of the DropBox.
Only MPG	Only monitor files with a `mpg` extension in the top-level of the DropBox.
Only VC1	Only monitor files with a `vc1` extension in the top-level of the DropBox.
Only VOB	Only monitor files with a `vob` extension in the top-level of the DropBox.
Only WMV	Only monitor files with a `wmv` extension in the top-level of the DropBox.
Pinnacle	The DropBox resides on a Pinnacle server. Monitor all media files named **std** in first-level subdirectories of the DropBox path.
Custom	User defined DropBox Filters (see page 109).

Configuring Automatic Reprocessing of Files in a DropBox

A file in a DropBox can be automatically reprocessed if there is a change in the last modified time or the size of the file.

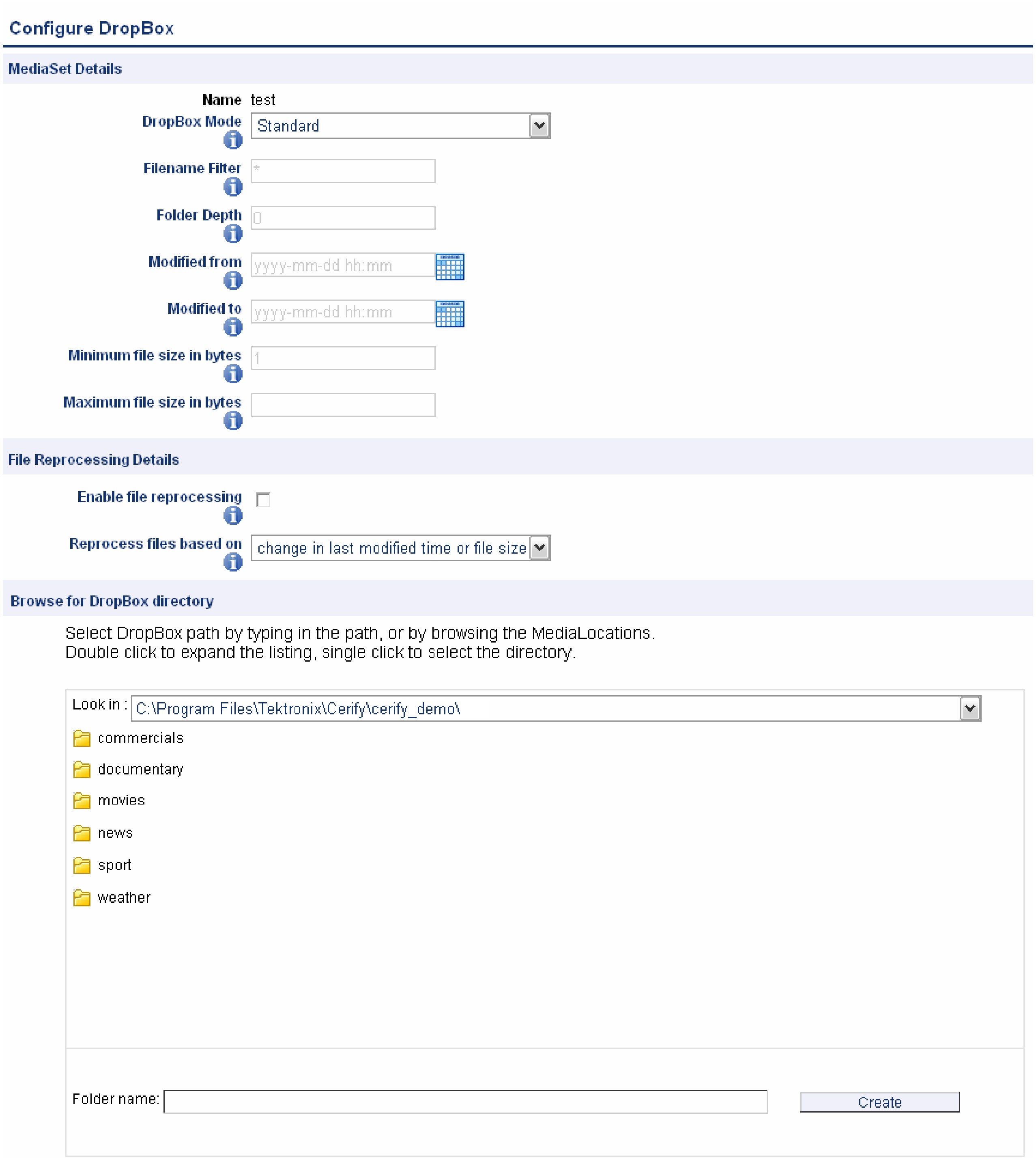
To configure automatic reprocessing of files:

1. Select **Enable file reprocessing** check box.
2. Select an option from **Reprocess files based on** drop-down menu.

The files are reprocessed based on the following options in the drop-down menu:

Item	Description
Change in last modified time or file size	A file is reprocessed if there is a change in the last modified time or the size of the file.
Change in last modified time	A file is reprocessed if there is a change in the last modified time of the file.
Change in file size	A file is reprocessed if there is a change in the size of the file.

In the DropBox path, type the path into the File name field, and then click **Create** button to finish configuring the DropBox. Alternatively, set the path by clicking the 📁 directory icons to get to the correct directory, and then click **Create** button.



Configure DropBox

MediaSet Details

Name	test
DropBox Mode	Standard
Filename Filter	*
Folder Depth	0
Modified from	yyyy-mm-dd hh:mm
Modified to	yyyy-mm-dd hh:mm
Minimum file size in bytes	1
Maximum file size in bytes	

File Reprocessing Details

Enable file reprocessing	□
Reprocess files based on	change in last modified time or file size

Browse for DropBox directory

Select DropBox path by typing in the path, or by browsing the MediaLocations.
Double click to expand the listing, single click to select the directory.

Look in : C:\Program Files\Tektronix\Cerify\cerify_demo\

- commercials
- documentary
- movies
- news
- sport
- weather

Folder name:

Configure a DropBox

DropBox Filters

DropBox filters allow you to limit which files get automatically added to a DropBox. Any of the following filter properties can be edited.

Filter properties	Description
Filename filter	The Filename filter allows you to select the files to be added to the DropBox by entering a wildcard pattern. Valid characters are ? which is used to represent exactly one character, and * which is used to represent any number of characters. If you want to match against the literal occurrence of a ? or * in a filename, you must precede them with a backslash. To match the literal occurrence of a backslash, you must input two backslashes into the filter. Filters are not case-sensitive.
Folder depth	By default, the system will only include files in the selected directory for processing. This is the same as entering a depth of 0. Entering a depth of 1 will also include files within the immediate child folders. A depth of 2 will go a level deeper, and so on.
Modified from	Only files with a modification time later than or equal to the time entered will be processed by the system. Dates can be entered using the calendar widget or can be typed in manually, in which case they must be in the "yyyy-mm-dd hh:mm" format. If the field is unedited or blank, the filter will not restrict based on this field. Note that all dates and times should be entered as UTC time.
Modified to	Only files with a modification time earlier than or equal to the time entered will be processed by the system.
Minimum file size in bytes	Only files with a file size greater than or equal to the value entered will be processed by the system.
Maximum file size in bytes	Only files with a file size less than or equal to the value entered will be processed by the system.
Reprocess files on last modified timestamp change	Only the files with a change in the last timestamp period will be reprocessed.
Reprocess files on size change	Only the files with a change in the file size will be reprocessed.

Table 2: Example filename filters

Filename filter	Will match	Will not match
*	everything	
*.mpg	foo.mpg, FoO.mPg	foo.mgp1, foo.mpeg
*.m?v	foo.mov, foo.m2v	foo.mv, foo.moov
news0??.mpg	news012.mpg, news000.mpg	news01.mpg, news0123.mpg
strange\?name.mpg	strange?name.mpg	strange1name.mpg, strangename.mpg
strange*name.mpg	strange*name.mpg	strange1name.mpg, strangename.mpg
strange\\name.mpg	strange\name.mpg	strange1name.mpg, strangename.mpg

⚠ **CAUTION.** *When setting up DropBox MediaSets, avoid using filters that pull in all (or a majority of) available assets on a loaded video server into a single DropBox MediaSet. Setting up such huge DropBoxes (holding in excess of 10,000 media files) is known to cause operational difficulties, such as difficulty in inspecting Job results, and should be actively avoided. In cases where a large number of assets are to be processed from the same location, you should use DropBox filters, such as* ***Modified from*** *and* ***Modified to****, to split the available content into multiple DropBoxes of manageable sizes (up to a few thousand files) and set up Jobs using them.*

Reports

The **Reports** page is accessed by selecting the **Reports** button from the navigation bar.

It allows you to set up and then generate a printer-friendly summary report of Job processing results. The two types of Reports that can be generated are:

- Job reports: allow the generation of reports for all or specific Jobs
- File reports: allow the generation of reports based on media file names

The Report type drop-down can be used to switch between the two types of reports. When Job type is selected, use the **Jobname** field to specify the name of the Job for which you want to generate the report. You can also enter partial Jobnames in this field to generate reports on all Jobs that have a name containing the partial name entered in this field. For File reports, use the **Filename** field to specify the name of the report file. You can enter either the full URL to a media file or just the filename into this field. The list of Jobs/Files in a report can also be narrowed down based on parameters such as Profile Name, Date from and Date to (the dates correspond to the Start and End time of Job/File processing). You can also specify the order in which items should be listed in the report, using the **Sort by** and **Sort order** fields. The system supports sorting the results based on Date, Job name, and Profile name in both ascending and descending directions.

The reports generated also provide links to media file processing results as well as alert details.

Options

The **Options** page is accessed by selecting the **Options** button from the navigation bar. It allows you to configure personal options and preferences such as password, list of columns to display on the Jobs Monitor and number of items to display per page when viewing tables of entities.

Change Password

You can change the password by entering the current password, and then entering and confirming the new password. The administrator can reset the password for any user at any time.

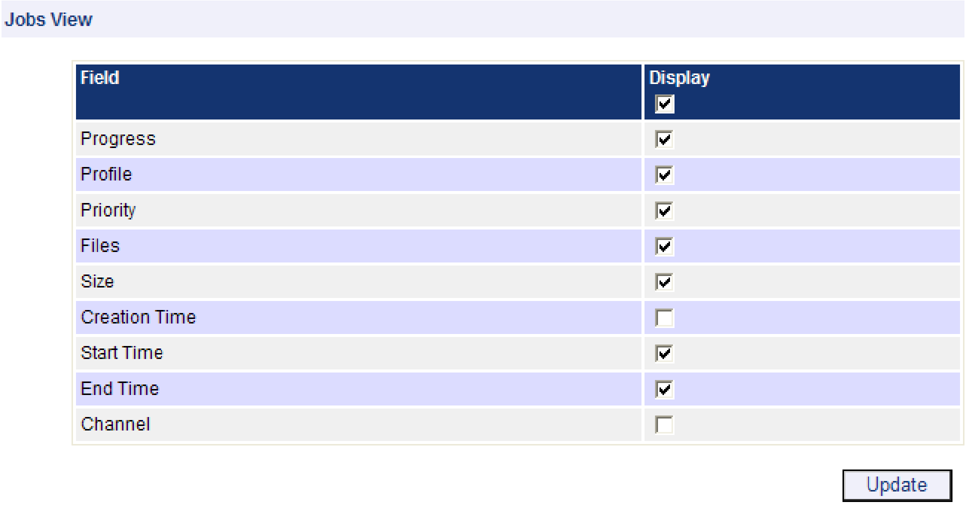
Records per Page

When a table, such as Job results, contains too many rows to fit on a single page, the system will split the report to display it over a number of pages. By default, the system presents tables with 10 rows or fewer. This number can be configured according to personal preference by entering a new value in the **No. Records per page** field in the Options page.

Jobs View

The columns in the table displayed by the Jobs Monitor (see page 53) can be configured to user preferences. This is done by clicking the check boxes in the presented form and then clicking the **Update** button.

For example, the following figure shows the preferences of a user who does not want to see a Job creation time or channel.



Jobs View

Field	Display ☑
Progress	☑
Profile	☑
Priority	☑
Files	☑
Size	☑
Creation Time	□
Start Time	☑
End Time	☑
Channel	□

Jobs View Options

Admin

The Admin page can only be accessed by users with administrator privilege. Select the **Admin** button from the navigation bar to open the Admin page.

NOTE. *The navigation bar includes an **Admin** button only if the logged-in user has administrator privilege.*

The Admin page allows you to:

- Create and modify users (see page 112)
- Create and modify MediaLocations (see page 113)
- Manage email settings (see page 117)
- Change system-wide processing settings (see page 117)
- Back up and Restore database (see page 118)
- Enable scheduled Job deletion (see page 119)
- Change system-wide report file settings (see page 119)
- Change system-wide stream information display threshold setting (see page 120)
- Enable the VLC playback feature (see page 120)
- View the application log (see page 122)

User Management

The Modify User section of the Admin page allows the administrator to create a new user or reset an existing user password. Once created, a user cannot be deleted.

Modify User

The properties for an existing user can be modified by selecting that user from the drop-down menu on the Admin page. Enter and confirm a new password for the selected user.

New User

The New User page is a form with fields for Username, Password, Confirm password, and Grant administrator access. Once these fields have been filled out, click the Create button to create the new user.

The new user name must be unique. New users can change their passwords by visiting the Options page (see page 110), or, if they have administrator access, by visiting the Modify User page (see page 112). Note that user names are case sensitive.

MediaLocation Management

A MediaLocation (see page 28) is a location on the local computer or on the network from which the system can access media files. Once a MediaLocation has been created, users will be able to create MediaSets (see page 104) and Jobs (see page 53) that use files from this location.

To create a MediaLocation, enter the URL or the file path of the location and, where necessary, the name and password of a user with permission to access media at this location. Any of these fields can be modified later. If the supplied URL cannot be accessed using the supplied credentials, an input error (see page 37) will be reported.

MediaLocation URLs can be split into two types:

- file:// protocols which refer to any file accessible via a driver letter (C:, D:, E:) available on the Cerify system. The media file accessed may be local (on the local hard drive) or remote (a network drive). These URLs can start with file://, in which case forward slashes must be used. For example, `file://C:/Video`. Alternatively, a standard Windows file path can be used, in which case back slashes must be used. For example, `C:\Video`.
- Other network protocols which Cerify has built in support for: ftp://, gvg://, and smb://. In this case, the URL must always contain a protocol identifier (for example, `ftp://` or `smb://`) to allow the system to identify the type of MediaLocation. Note that these URLs must always use forward slashes and not back slashes in directory paths. For example, `smb:\\machinename\dir` is not a valid location.

NOTE. *Typically, the system does not modify or delete any of the files under the supplied URL; it only requires read access for processing. However, users can specify Action Template (see page 100) rules that will copy a media file to a new location and then delete the original upon completion of a Job. In this case the user will require write access to the location in question.*

NOTE. *UNC notation is not supported in MediaLocation. For example, `\\machinename\dir` is not a valid location.*

More examples of the different types of access protocols and network URLs are given in the following table.

Table 3: Supported connectivity types and protocols

Test asset location	Access protocol	Example URL	URL description
Local Hard Drive	FILE	`file://C:/testassets` `C:\testassets`	Access files on the local hard drive of the machine on which Cerify is installed. Such URLs have two parts, the first being the protocol identifier `file://` and the second part `C:/testassets` being a locally accessible path. ***NOTE.*** *The URL format for the FILE protocol uses forward slashes and not backslashes as the corresponding native path structure in Windows. Also, you need not specify a user name/password when setting up a MediaLocation using the file:// protocol.*
DVD drive or Removable storage	FILE	`file://D:/testfolder` `E:\samples`	file:// protocol should be used when accessing a DVD drive or removable storage device that is available locally to the machine running Cerify.
DVD drive or Removable storage on a remote computer	FILE or SMB	`smb://machinename/DVD-share/` `z:\USBshare`	In cases where test assets are located on a remote DVD drive or removable device then that device must be shared. In the second example, the Z: drive on the Cerify system has been set up to point to the shared drive
FTP server	FTP	`ftp://192.168.0.153/assets/`	File Transfer Protocol. Access the assets directory using the FTP server at the supplied location.
Windows File Share	FILE or SMB	`file://Z:/dir` `smb://machinename/dir`	Test assets located in a shared folder on a remote PC may be access over file:// protocol through mapped network drives. The example given assumes the remote shared folder to be mapped as “Z” drive on the machine running Cerify. Windows networking, also known as CIFS can also be used to access files and directories mounted on machine name. ***NOTE.*** *It is recommended that the file:// protocol be used in preference to smb:// in this case, unless fine grained control of smb client configuration which is not supported by Windows is needed (needing to set the buffer size to use when copying files from remote Windows shares).*

Table 3: Supported connectivity types and protocols (cont.)

Test asset location	Access protocol	Example URL	URL description
Remote machine running a Network File Share (NFS) server	FILE	`file://N:/dir`	Network File Shares allow you to access from Cerify, test assets that are located on any remote server that runs an NFS server irrespective of the remote server's operating system (for example, a Linux server). Shares exported by the remote NFS server are accessed locally with the help of an NFS client. Once appropriately configured, the NFS client lets you access the remote folder as if it were a local drive, which lets you process remote assets from such shares using the file:// protocol. The example URL assumes N:\ to be mapped to such a remote NFS share using an NFS client, such as the one freely available from Microsoft. Refer to Using NFS Client on Windows (see page 203)
Grass Valley Server	GVG	`gvg://192.168.0.154/192.168.100.10/EXT:/` (This example URL should be entered on a single line with no spaces.)	There are at least three components to a GVG URL: in the example to the left, "192.168.0.154" is the IP address of an AMP (Advanced Media Protocol) server running on the Windows NT control network. "192.168.100.10" is the IP address of the corresponding FTP server on the Grass Valley video network. "EXT:" is the Dataset (also called the Volume Name) of the disk where the content resides. The GVG protocol is only suitable for use in MediaLocations (see page 28) and not (for example) in the Database Backup (see page 118) settings or the Report File Settings (see page 119). Due to the way in which Grass Valley servers work, it is impossible to validate logon credentials until an attempt to retrieve a file is made. For this reason, a MediaLocation will always be created regardless of whether the username and password given are correct, so it is important that the username and password are entered carefully. The usernames "movie" and "mxfmovie", both with blank passwords, are common. ***NOTE.*** *Only GVG Profile servers require the use of this protocol. GVG K2 servers support file transfer over FTP and should be accessed using the FTP protocol.*

Table 3: Supported connectivity types and protocols (cont.)

Test asset location	Access protocol	Example URL	URL description
Omneon MediaGrid	FILE	`file://Z:/testassets`	Test assets that are held on an Omneon MediaGrid File System can be accessed using the file:// protocol through mapped network drives. ***NOTE.*** *You will need to install the MediaGrid File System Driver on the machine running Cerify in order to be able to create the mapped network drive.*

These connectivity methods can be used to access any Video Server which supports one or more of these protocols. In practice, the video server may not support the protocol completely which can lead to difficulties when trying to connect Cerify to the server. The servers listed below are explicitly supported. Cerify may connect correctly to other types of servers, and there have been successful installations of Cerify with other types of servers.

Table 4: Supported video servers

Name	Description
Generic Windows servers	Files can be accessed by standard Window File share. All versions of Windows that can share files through the Windows file share protocol are supported.
Omneon	For Omneon Spectrums, FTP connectivity is preferred since it has superior throughput to CIFS. By default Omneon Spectrums do not support more than 10 simultaneous FTP read connections. It is preferable to use the Omneon MediaGrid File System Driver rather than the ContentBridge for connecting to a MediaGrid.
Pinnacle (Avid)	The Pinnacle Warp and Media Stream 8000 series servers are supported. Care should be taken when creating Pinnacle DropBoxes with extremely large numbers of assets, since the time required to update the DropBox will be very long. Where possible a lower level (more nested) directory should be selected as the DropBox.
Grass Valley	The Grass Valley Profile and K2 servers are supported. Connectivity with Profile servers is provided by the 3rd Gigabit Ethernet interface (NIC 3), which should be connected to the Grass Valley AMP control network. Cerify requires the AMP service to be running and it is sometimes necessary to configure the server to run the AMP service. K2 servers can be connected in the same way; alternatively a single FTP connection can be used. Fiber channel connectivity is not supported.
Nexio	Modifications may be required to the Cerify configuration in order to access a Nexio server, please contact your Tektronix representative for more details.
Isilon	Files can be accessed by SMB or FTP (or NFS).
SeaChange	Files can be accessed by FTP. The Forcelistnodot property in cerify.properties has to be set to True.
Apple XSAN	Files can be accessed through FTP or NFS.

Mail Settings

The Mail Settings form allows the administrator to configure an e-mail server for use by the system. The required settings are:

Setting	Description
Server	The host name or IP address of an SMTP server that the system can access. Example: `my.mailserver.com`.
Username	A user name recognized by the mail server (leave blank if the mail server requires no authentication).
Password	The password recognized by the mail server for this user.
Sender e-mail address	The address from which the system will send e-mail.

NOTE. *E-mail use is optional within the system. The only use of e-mail within the system is in the rules for Action Templates (see page 100). If no such rules are required, then the e-mail settings form can be left blank.*

Processing Settings

The Processing Settings section of the Admin page (see page 111) allows the administrator to configure system-wide settings.

Setting	Default	Description
Poster frame coverage	15%	The percentage of the frame area that must be non-black for that frame to be classed as a poster frame.
Poster frame threshold	15%	The percentage grayscale value used to determine if a pixel is black. A grayscale value of 0% corresponds to a luma value of 16, and 100% corresponds to 235. This percentage is also used in an inverted sense to determine if a pixel is white.

NOTE. *A Poster Frame is the first visually distinct frame of a video asset following any white or black lead-in. The system uses a heuristic to determine which frame this is: the default settings use a threshold of 15% and a coverage of 15%, meaning that the pixels are considered black if their grayscale value is 15% or less, and that a frame is considered to be a poster frame if it is the first frame with 15% or more non-black pixels. The system also reverses this test, swapping white for black, to handle video assets that have a white lead in. Poster frames provide the thumbnail images used on the Job Details (see page 56) page.*

Database Backup

The system maintains a database of all entities (Jobs, Profiles, Templates, MediaSets and MediaLocations) created by users, as well of all the results, alerts and thumbnails create by running Jobs. The administrator can arrange for this data to be backed up by entering the following information:

Database backup settings	Description
Backup Directory URL	The URL of a directory to be used for backups. This URL can use the FTP or Windows File Share protocols supported by the system. Refer to MediaLocation Management (see page 113). The system will create the backup in this directory in a file called `backup.sql`.
Username	The name of a user with write access to this directory.
Password	The user password.

Once the database backup settings have been entered correctly, clicking the **Backup now** button within the **Database Backup** section will initiate an immediate backup of the database. Ensure that no Jobs are running when carrying out a backup. Any Jobs or other operations which are in progress during the backup may fail.

⚠ ***CAUTION.*** *Database loss can be caused, for example, by disk caching corruption during power failure. To avoid losing data, you should set up a backup location and confirm that the backup file is created in that location. Depending upon the importance of the data, backups should be created regularly, from once a day to once a week. To reduce the risk of losing the current Cerify database, the use of a suitable RAID system, such as RAID-1, for the hard drives is recommended.*

Clicking the **Restore backup** button will cause the system to look for the existence of a `backup.sql` file in the backup directory URL set and to restore the database from this backup file. When the restore from backup is in progress, any user trying to access the system will be taken to an informational page instead. When the restore is complete, the user will be taken back to the Admin screen.

⚠ ***CAUTION.*** *The restore operation will restore user names and passwords to the previous state. If the admin password has changed, ensure that you know the previous admin password before carrying out the restore.*

Schedule Job Deletion

These settings allow you to automatically purge the Cerify database of completed Jobs older than a specified age. All associated result information (for example: alert details, stream information and thumbnail images) pertaining to the Jobs that match the deletion criteria are also deleted.

Setting	Default	Description
Enable Job deletion	Off	Turn On/Off scheduled Job deletion.
Delete Jobs older than	30	The age of Jobs to be considered for scheduled deletion, specified in days. The age of a Job is calculated as the time elapsed, in days, since it was last marked complete.
Perform deletion at	2	The hour of the day in which to start the scheduled Job deletion operation. This setting accepts values in the range (0-23) and should be used to ensure that the deletion happens during a period of least system usage.

NOTE. *Only those Jobs with all their media files marked as complete or aborted are considered for scheduled deletion. Jobs that have been manually paused/stopped will need to be deleted through the Cerify Web user interface.*

Report File Settings

Action Templates (see page 100) allow users to create e-mail and XML reports, which detail the results of Job processing.

These e-mail reports can either be:

- Sent directly to a user (in which case, an administrator must also set up e-mail settings (see page 117))
- Written to a network location as an `*.eml` file (in which case, an administrator must enter suitable report file settings)

The XML reports are also written out to the same network location as the e-mail files.

Setting	Description
Report directory URL	The URL of a directory to be used for report files. This URL can use the FTP or Windows File Share protocols supported by Cerify. Refer to MediaLocation Management (see page 113).
Username	The name of a user with write access to this directory.
Password	The user password.

Stream Information

The stream information section of the Admin page (see page 111) allows the administrator to configure the system-wide threshold for displaying stream information for processed media files. This setting can be modified to display either a minimal set of attributes, most attributes or all of the stream information that has been captured by the system for the media file.

Setting	Default	Description
Display	minimal attributes	The extent of stream information attributes that must be displayed in Processing Results page and Reports.

NOTE. *Stream information is a set of attributes that describe the media file that was processed. These attributes are grouped into three sections: Container Info, Video Info, and Audio Info. The stream information for a media file is displayed on the Processing Result (see page 57) page and in the Reports (see page 110) generated by the system.*

VLC playback

The VLC playback section of the Admin page (see page 111) allows the administrator to enable the VLC playback feature, which lets users of the system play back processed media files from the Web user interface on client machines. This setting can be used to enable/disable this feature for all users of the system.

Setting	Default	Description
Enable media file playback with VLC media player	Off	Availability of the VLC playback feature, enabled or disabled.

NOTE. *Refer to the Enabling VLC playback (see page 121) section for more information on the additional software requirements for this feature to be operational. Refer to Job Details (see page 56) for information on playing back processed media files.*

If the VLC playback feature is enabled in the system but the client machine does not meet the software prerequisites for this feature, attempting to play back media files will generate browser errors. In Mozilla Firefox you get the error message "Firefox doesn't know how to open this address, because the protocol (cerify) isn't associated with any program". In Microsoft Internet Explorer, the browser shows a "The page cannot be displayed" error.

Enabling VLC playback

The VLC Playback feature is optional and will not affect the Cerify functions. Also, the software components installed to enable the playback feature will not affect Cerify functions. To enable playback of media files analyzed by the system from the Web user interface, you would also need to do the following:

- Install the CerifyVlcLauncher application on each of the client machines from which you want to access the Cerify Web user interface.
- Install the VLC media player on each of the client machines from which you want to access the Cerify Web user interface. Visit www.videolan.org for information on how to obtain and install the VLC media player.
- Enable the VLC playback feature from the Cerify Web user interface. Refer to VLC playback (see page 120) for more information on enabling the VLC playback feature.

To install the CerifyVlcLauncher application:

- Download the CerifyVlcLauncher installer to the target client machine. If you are viewing this page from the Help pages in the Cerify Web interface, click here to begin the download.

  If you are viewing this page from a printed or a PDF version of the user manual, please access the URL `http://your_cerify_host/CerifyVlcLauncher_1.0.msi`, replacing `your_cerify_host` with the IP address or hostname of your Cerify system.
- Double-click the downloaded installer to start the installation process.
- Follow the on-screen instructions to complete the installation.

The VLC playback feature supports the following container and video standards:

Standard	Supported wrappers/codecs
Container	MPEG-2 part 1 PS
	MPEG-2 part 1 TS
	MPEG-2 part 2
	QuickTime (self-contained movies only)
	MP4
	ASF
	3GPP
	DV
	MXF
	GXF
Video	MPEG-2
	MPEG-4
	H.264/AVC
	VC-1
	H.263
	DV

NOTE. *The CerifyVlcLauncher application is supported on the same Microsoft Windows platforms that Cerify is supported on.*

Tektronix does not provide technical support for the VLC application and its functionality.

Software components required to be installed to enable the playback feature have no effect on how Cerify functions and are strictly optional.

The CerifyVlcLauncher installation adds information to the system registry on the client machine and creates folders and files during the installation. The installation will fail if the user attempting the installation is not authorized to modify the system registry or to create files/folders on the client machine.

This feature requires Cerify to pass MediaLocation credentials, such as CIFS and FTP usernames and passwords, to the VLC application for it to be able to access MediaLocations. This information gets cached by VLC, which may be considered as compromising logical security.

On accessing a VLC playback (see page 120) link using the Mozilla Firefox Web browser for the first time on a client machine, the browser will request the user for permission to launch the CerifyVlcLauncher application to handle the "cerify:" links. You should select the "Launch application" button in this "External Protocol Request" dialog for the VLC playback feature to work. This warning dialog provides an option to let Firefox remember this choice and can be selected to avoid subsequent attempts to playback media files from raising this warning again. In Microsoft Internet Explorer, no such warning is raised.

To enable access to smb:// shares over the network, you may need to create a Windows network mapping to the target share on the client machine.

Playback of files with non-ASCII characters in their names is not supported by the VLC feature.

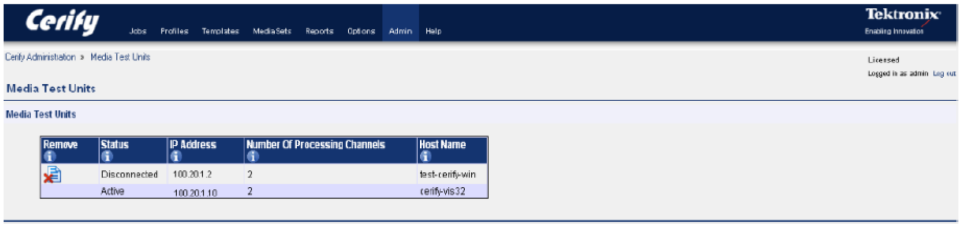
Application Log

By clicking **Log** on the Admin page (see page 111), users with administrator privilege can view the application Log. This log contains high level information logged by the system, such as version upgrade details, database backup and restore details and template import and export details.

Media Test Units Page

By selecting the Media Test Units link on the Admin page (see page 111), it is possible to view the status of the Media Test Units connected in a cluster. Since a standalone system does not connect to any Media Test Units, this link is unavailable in the Web UI of a standalone system. When you click the link, you are taken to the Media Test Units page which lists all the Media Test Units that are in the cluster.

NOTE. *This list displays all the Media Test Units that have been ever added to the cluster, including those that are currently off or not connected.*



Cerify Administration » Media Test Units

Licensed
Logged in as admin Log out

Media Test Units

Media Test Units

Remove	Status	IP Address	Number Of Processing Channels	Host Name
	Disconnected	100.201.2	2	test-cerify-win
	Active	100.201.10	2	cerify-vis32

The Media Test Units page displays the following information about each Media Test Unit:

- The status of each Media Test Unit. This can take two values: "Active" or "Disconnected".
- The IP address of the Media Test Unit. This IP address will be same as the one chosen during the Media Test Unit installation.
- The number of channels configured on that Media Test Unit.
- The host name of the Media Test Unit.

From the Media Test Units page it is possible to remove the information about a particular Media Test Unit, by clicking the Delete icon. This is useful if a unit has been permanently physically removed from a cluster and is not going to be reconnected. For example, this might occur due to a hardware failure, or if the Media Test Unit is being moved to another cluster. Media Test Units can be removed only if they are currently not active.

NOTE. *Clicking the Delete icon does not mean that this Media Test Unit will not be included in the cluster next time it is rebooted; it simply removes the Media Test Unit details from the database. Therefore, if this is done in error, it is possible to view the details for the Media Test Unit the next time it is booted into the cluster.*

Help

This section provides information on accessing and navigating the online help pages for the system.

Accessing the Online Help

The online version of this manual can be accessed at any time by selecting the **Help** button from the page header. This link is context-sensitive and will take the user to a section of the manual appropriate to the page that is being viewed.

In addition, links to the online manual are embedded within the main body of most pages of the user interface. These links are also context-sensitive and are indicated by the ⓘ icon.

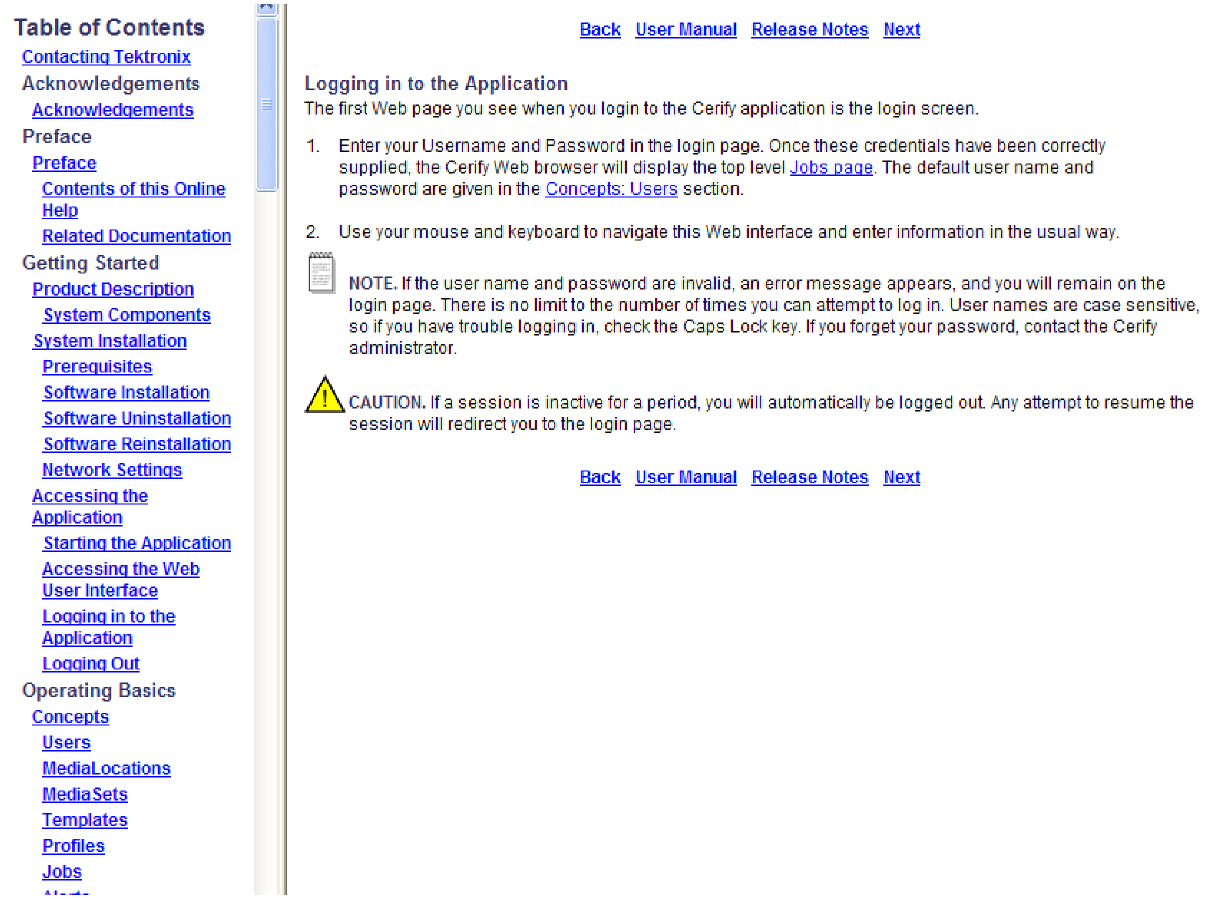
Using the Online Help

The online version of this manual can be navigated using a Web browser. Every page contains informational icons.

Table 5: Informational icons

Icon	Description
⚠	Caution! Used to warn the reader of a possible pitfall.
💡	Tip. Advice for the reader.
🗒	Note. Extra information on a section.

When you click **Help** on the Navigation bar, help information appears as shown in the following figure. The Table of Contents appears on the left pane and the help information appears on the right pane. Navigate to any section by clicking the topics listed in the Table of Contents or by clicking the **Back** or **Next** link. You can access the PDF version of the help file and the release notes by clicking **User manual** and **Release Notes** links respectively.



Logging in to the Application

The first Web page you see when you login to the Cerify application is the login screen.

1. Enter your Username and Password in the login page. Once these credentials have been correctly supplied, the Cerify Web browser will display the top level Jobs page. The default user name and password are given in the Concepts: Users section.

2. Use your mouse and keyboard to navigate this Web interface and enter information in the usual way.

NOTE. If the user name and password are invalid, an error message appears, and you will remain on the login page. There is no limit to the number of times you can attempt to log in. User names are case sensitive, so if you have trouble logging in, check the Caps Lock key. If you forget your password, contact the Cerify administrator.

CAUTION. If a session is inactive for a period, you will automatically be logged out. Any attempt to resume the session will redirect you to the login page.

Appendix A: Alerts

This section lists and defines all the stream compliance and integrity checks that can be carried out. These include: checks that the stream codewords are correctly formed, semantic checks that decoded values are within the allowable range for that parameter; parameter checks; quality checks associated with tests performed on baseband video.

Table 6: Alert icons in the Web user interface

Icon	Severity
STOP	Fatal
✖	Error
⚠	Warning
✓	Info

List of Alerts

In the following table, Alert ID specifies the alert identifier visible in the Alert Details page (see page 59); Severity shows the alert severity level; Class shows the codec(s) or container(s) that the alert relates to, or whether it relates to a parameter or template rule check; Context shows the area of syntax within the stream or container, or the check or test case the alert is related to; Title shows the description of the check.

Table 7: Alerts

Alert ID	Severity	Class	Context	Title
11001	Fatal	All	General	Unexpected system fatal
11002	Fatal	All	General	Unexpected fatal
11003	Fatal	All	General	Unclassified fatal
11004	Fatal	All	General	Invalid file format
11005	Fatal	All	General	Licence feature error
11006	Fatal	All	General	Memory allocation failure
11007	Fatal	All video	General Video	Frame width is zero
11008	Fatal	All video	General Video	Frame height is zero
11009	Fatal	All video	General Video	Invalid image format
11010	Fatal	All audio	General Audio	Invalid audio format
11011	Fatal	All	General	No entry point found
11012	Fatal	All	General	Input is scrambled
11013	Fatal	All video	General Video	Invalid video format
11014	Fatal	All	General	Unsupported input file format

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
11015	Fatal	All	General	Processing Error
11016	Fatal	All	General	Unrecognised input file format
11017	Fatal	All	General	Can't open input file
11018	Fatal	All	General	Can't select track
11019	Fatal	All	General	Video stream not present
11020	Fatal	All	General	Audio stream not present
11021	Fatal	All	General	Temporary File Error
11022	Fatal	All	General	Socket Error
11023	Fatal	All	General	QuickTime missing
11024	Fatal	All	General	Required QuickTime plug-in missing
11025	Fatal	All	General	QuickTime error
11501	Fatal	MPEG-2 video, MPEG-4 video, H.264/AVC video, MPEG-4 container	General	Fatally out of sync
11751	Fatal	H.263 video	Picture Layer	Unsupported options in the stream
11752	Fatal	H.263 video	Picture Layer	Unsupported option: Annex E
11753	Fatal	H.263 video	Picture Layer	Unsupported option: Annex N
11754	Fatal	H.263 video	Picture Layer	Unsupported option: Annex R
11755	Fatal	H.263 video	Picture Layer	Unsupported option: Picture Type
11756	Fatal	H.263 video	Picture Layer	Unsupported option: RPS mode/IDS mode
11757	Fatal	H.263 video	Picture Layer	Unsupported option: PB frames
11758	Fatal	H.263 video	Picture Layer	Invalid custom picture format
12060	Fatal	MPEG-2 video	Macroblock	Invalid macroblock_escape
12076	Fatal	MPEG-2 video	Video Sequence	Invalid chroma_format
12084	Fatal	MPEG-2 video	Video Sequence	Invalid video_format
12196	Fatal	MPEG-2 video	Video Sequence	Scalability modes not supported
12198	Fatal	MPEG-2 video	Video Sequence	Chroma format not supported

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
12199	Fatal	MPEG-2 video	Video Sequence	Unrecognised stream type
12200	Fatal	MPEG-2 video	Video Sequence	Repeated header differs from previous header
13001	Fatal	MPEG-4 video	Video Object Layer	Unsupported video_object_type_indication
13002	Fatal	MPEG-4 video	Video Object Layer	VOP width zero
13003	Fatal	MPEG-4 video	Video Object Layer	VOP width odd
13004	Fatal	MPEG-4 video	Video Object Layer	VOP width greater than maximum supported
13005	Fatal	MPEG-4 video	Video Object Layer	VOP height zero
13006	Fatal	MPEG-4 video	Video Object Layer	VOP height odd
13007	Fatal	MPEG-4 video	Video Object Layer	VOP height greater than maximum supported
13008	Fatal	MPEG-4 video	Video Object Layer	Interlace unsupported
13010	Fatal	MPEG-4 video	Video Object Layer	obmc_disable zero
13011	Fatal	MPEG-4 video	Video Object Layer	sprite_enable is 1
13012	Fatal	MPEG-4 video	Video Object Layer	not_8_bit is 1
13013	Fatal	MPEG-4 video	Video Object Layer	newpred_enable is on
13014	Fatal	MPEG-4 video	Video Object Layer	reduced_resolution_vop_enable is on
13015	Fatal	MPEG-4 video	Video Object Layer	scalability is 1
13016	Fatal	MPEG-4 video	General	Invalid start code
13017	Fatal	MPEG-4 video	Visual Object	OBMC unsupported
13018	Fatal	MPEG-4 video	Video Object Layer	Unsupported chroma_format
13019	Fatal	MPEG-4 video	Video Object Layer	Unsupported low_delay
13020	Fatal	MPEG-4 video	Video Object Layer	Unsupported video_object_layer_shape extension
13021	Fatal	MPEG-4 video	Video Object Layer	S-VOP not allowed
13022	Fatal	MPEG-4 video	Video Object Layer	Unsupported visual object type
13023	Fatal	H.263 video, MPEG-4 video	General	Input buffer length exceeded
13025	Fatal	H.263 video, MPEG-4 video	General	Unsupported video format
14019	Fatal	H.264/AVC video	RBSP.SPS	Incorrect num_ref_frames_in_pic_order_cnt_cycle
14037	Fatal	H.264/AVC video	RBSP.PPS	Incorrect num_slice_groups_minus1

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
14269	Fatal	H.264/AVC video	RBSP.Slice layer	Illegal slice_group_map_type
14270	Fatal	H.264/AVC video	RBSP.SEI	Illegal ref_area_indicator
14271	Fatal	H.264/AVC video	NAL unit	Failed to position input stream
14274	Fatal	H.264/AVC video	General	Level unsupported
14275	Fatal	H.264/AVC video	NAL unit	NALU too large
14276	Fatal	H.264/AVC video	General	Profile unlicensed
14277	Fatal	H.264/AVC video	General	Invalid reference frame
14280	Fatal	H.264/AVC video	RBSP	No valid Sequence Parameter Set available
14281	Fatal	H.264/AVC video	General	Too many slices
14282	Fatal	H.264/AVC video	RBSP	DPB too small to contain any pictures
15001	Fatal	YUV video	General	Invalid raw file format
15250	Fatal	Dolby-E	Dolby-E Frame	No Dolby-E frame found
16000	Fatal	VC-1 video	Sequence Layer	Invalid profile
16364	Fatal	VC-1 video	Sequence Layer	Metadata indicates non-compliant stream
16365	Fatal	VC-1 video	Sequence Layer	Failed to parse sequence header
16366	Fatal	VC-1 video	Picture Layer	Multiresolution coding not supported
16501	Fatal	Parameter	Container Parameter Check	Test for attribute System Container failed
16502	Fatal	Parameter	Video Parameter Check	Test for attribute Video Standard failed
16503	Fatal	Parameter	Audio Parameter Check	Test for attribute Audio Standard failed
17547	Fatal	MPEG-1/2 audio	Audio Data	Failed to open bit allocation table
17548	Fatal	MPEG-1/2 audio	Audio Data	Failed to open bit stream
17549	Fatal	MPEG-1/2 audio	Audio Data	Failed to open file
17550	Fatal	MPEG-1/2 audio	Audio Data	Failed to open Huffman table
17551	Fatal	MPEG-1/2 audio	Audio Data	Failed to open synthesis table
17552	Fatal	MPEG-1/2 audio	Audio Data	Error in synthesis window table
17553	Fatal	MPEG-1/2 audio	Audio Data	Error in Huffman table
17554	Fatal	MPEG-1/2 audio	Audio Data	Error in Huffman tree

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
17555	Fatal	MPEG-1/2 audio	Audio Data	Layer and mode combination are invalid for indexing into js bound array
17556	Fatal	MPEG-1/2 audio	Audio Data	Buffer overflow reading bitstream
17557	Fatal	MPEG-1/2 audio	Audio Data	Stream writing can only be done in word blocks
17558	Fatal	MPEG-1/2 audio	Audio Main Data	Side info error - block type is zero
17559	Fatal	MPEG-1/2 audio	Audio Header	Layer parameter in header is invalid
17953	Fatal	AAC audio	Aac Main Ssr Lc Ltp Payloads	Required FIR Filter undefined by this decoder
17954	Fatal	AAC audio	Aac Main Ssr Lc Ltp Payloads	Error in downsampling
17955	Fatal	AAC audio	Aac Decoder Config	Audio object not supported by this decoder
17956	Fatal	AAC audio	Aac Sequence	Access Unit to be removed is missing
17957	Fatal	AAC audio	Aac Sequence	Access Unit to be removed is not of expected length
17958	Fatal	AAC audio	Aac Sequence	Start and/or end of Access Unit to be decoded is not byte aligned
17959	Fatal	AAC audio	Aac Sequence	AAC bit buffers have become out of sync
17960	Fatal	AAC audio	Aac Sequence	Required AAC buffer has not been created
17961	Fatal	AAC audio	Aac Sequence	Overflow in bit buffer during bit transfer
17963	Fatal	AAC audio	Aac Sequence	Channel configuration is inconsistent
17964	Fatal	AAC audio	Aac Sbr Payloads	SBR bitstream is invalid - error in reading or decoding SBR data
17965	Fatal	AAC audio	Aac Decoder Config	Sampling frequency not supported by this decoder
17966	Fatal	AAC audio	Aac Sequence	Two channels without a shared common window is not supported by this decoder
17967	Fatal	AAC audio	Aac Main Ssr Lc Ltp Payloads	Huffman decoding failed

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
17968	Fatal	AAC audio	Aac Main Ssr Lc Ltp Payloads	Error reading or decoding coupling_channel_element (CCE)
17969	Fatal	AAC audio	Aac Main Ssr Lc Ltp Payloads	Error reading or decoding data_stream_element (DSE)
17970	Fatal	AAC audio	Aac Sbr Payloads	The number of SBR elements found in this frame does not match the number of single_channel_elements and channel_pair_elements
17972	Fatal	AAC audio	Aac Sequence	Wrong number of channels in command line
17973	Fatal	AAC audio	Aac Sequence	Scalable sample rate (SSR) is not allowed in this profile
17974	Fatal	AAC audio	Aac Subsidiary Payloads	window_sequence is incorrect
17975	Fatal	AAC audio	Aac Subsidiary Payloads	Unknown predictor type
17982	Fatal	AAC audio	Aac Subsidiary Payloads	hcod_esc_z escape prefix is longer than 8 bits long
17983	Fatal	AAC audio	Aac Subsidiary Payloads	hcod_esc_y escape prefix is longer than 8 bits long
17987	Fatal	AAC audio	Aac Subsidiary Payloads	Cannot specify both length of scalefactor data and reversible variable length coding (RVLC)
17989	Fatal	AAC audio	Aac Subsidiary Payloads	Gain control not implemented in this decoder
17992	Fatal	AAC audio	Aac Sequence	Negative number of bits calculated while decoding huffman codeword
17993	Fatal	AAC audio	Aac Sequence	Specified window shape is not supported by this decoder
17994	Fatal	AAC audio	Aac Sequence	Specified window length is invalid
17995	Fatal	AAC audio	Aac Sequence	Specified number of short windows is invalid
17996	Fatal	AAC audio	Aac Sequence	Specified window sequence is invalid

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
17997	Fatal	AAC audio	Aac Sequence	Specified predictor order is invalid
17998	Fatal	AAC audio	Aac Sequence	Specified time constant is invalid
17999	Fatal	AAC audio	Aac Sequence	Specified attenuation is invalid
18000	Fatal	AAC audio	Aac Sequence	Specified number of segment bits is too large
18001	Fatal	AAC audio	Aac Sequence	Error reading codeword
18003	Fatal	AAC audio	Aac Sequence	Error in ln gain calculation
18004	Fatal	AAC audio	Aac Sequence	Specified block length is too large
18005	Fatal	AAC audio	Aac Sequence	Specified sample rate index is invalid
18006	Fatal	AAC audio	Aac Sequence	Specified bitrate index is invalid
18007	Fatal	AAC audio	Aac Sbr Payloads	Failed to initialise the SBR decoder
18008	Fatal	AAC audio	Aac Sequence	Invalid number of channels
18009	Fatal	AAC audio	Aac Sequence	Internal AAC decoder error
18250	Fatal	MXF	MXF Container layer	Fatal MXF Container error
18251	Fatal	MXF	MXF Container layer	Missing external essence
18252	Fatal	MXF	MXF Container layer	Missing sample depth information
18253	Fatal	MXF	MXF Container layer	Unsupported Operational Pattern
21001	Error	All	General	Unclassified error
21002	Error	All	General	VLD error
21003	Error	All	General	Missing start code
21004	Error	All audio	General Audio	Audio decode error
21005	Error	All	General	Unable to copy file to remote location
21006	Error	All	General	Additional syntax restriction not met
21007	Error	All	General	Unable to move file
21008	Error	All	General	File size error
21009	Error	All audio	General audio	Audio template error
21010	Error	All audio	General audio	Audio stream not present
21011	Error	All audio	General audio	Invalid channel configuration
21012	Error	All audio	General audio	Audio definition mismatch

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
21501	Error	H.263 video	General	Too many out-of-sync
21502	Error	H.263 video	General	Out of sync
21751	Error	H.263 video	Block Layer	More than 64 coefficients
21752	Error	H.263 video	Picture Layer	SEPB1 is 0
21753	Error	H.263 video	Picture Layer	SEPB1 is 0 (RS sub-mode)
21754	Error	H.263 video	Picture Layer	SEPB2 is 0 (MBA>11)
21755	Error	H.263 video	Picture Layer	SEPB2 is 0 (MBA>9 and CPM)
21756	Error	H.263 video	Picture Layer	SEPB3 is 0
21757	Error	H.263 video	Picture Layer	PTYPE 1st bit 1 is not 1
21758	Error	H.263 video	Picture Layer	PTYPE 2nd bit 1 is not 0
21759	Error	H.263 video	Picture Layer	Invalid picture size in OPPTYPE
21760	Error	H.263 video	MB Layer	Too many MBs in GOB
21761	Error	H.263 video	MB Layer	Error in MCBPC_P VLC
21762	Error	H.263 video	MB Layer	Error in MCBPC_I VLC
21763	Error	H.263 video	MB Layer	Error in CBPY VLC
21764	Error	H.263 video	MB Layer	Error in AIC VLC
21765	Error	H.263 video	MB Layer	Error in MV VLC
21766	Error	H.263 video	GOB Layer	Out of sync in GOB
21767	Error	H.263 video	Picture Layer	Error in stuffing bits
21768	Error	H.263 video	Picture Layer	marker_bit is 0
21769	Error	H.263 video	MB Layer	Error MQUANT is zero
21770	Error	H.263 video	Block Layer	Error in TCOEFF
21771	Error	H.263 video	MB Layer	Motion vector exceeds picture boundary
22000	Error	MPEG-2 video	Video Sequence	Unknown extension_start_code_identifier
22001	Error	MPEG-2 video	Video Sequence	Invalid start_code
22002	Error	MPEG-2 video	Video Sequence	Invalid extension_start_code
22007	Error	MPEG-2 video	Picture	Invalid picture_coding_type
22009	Error	MPEG-2 video	Picture	Invalid full_pel_forward_vector
22010	Error	MPEG-2 video	Picture	Invalid forward_f_code
22011	Error	MPEG-2 video	Picture	Invalid full_pel_backward_vector
22012	Error	MPEG-2 video	Picture	Invalid backward_f_code

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
22013	Error	MPEG-2 video	Picture	Invalid extra_bit_picture
22015	Error	MPEG-2 video	Picture	Invalid f_code
22016	Error	MPEG-2 video	Picture	Invalid intra_dc_precision
22017	Error	MPEG-2 video	Picture	Invalid picture_structure
22024	Error	MPEG-2 video	Picture	Invalid repeat_first_field
22053	Error	MPEG-2 video	Slice	Invalid quantiser_scale_code
22062	Error	MPEG-2 video	Macroblock	Invalid frame_motion_type
22063	Error	MPEG-2 video	Macroblock	Invalid field_motion_type
22066	Error	MPEG-2 video	Video Sequence	Invalid horizontal_size_value
22067	Error	MPEG-2 video	Video Sequence	Invalid vertical_size_value
22068	Error	MPEG-2 video	Video Sequence	Invalid aspect_ratio_information
22069	Error	MPEG-2 video	Video Sequence	Invalid frame_rate_code
22074	Error	MPEG-2 video	Video Sequence	Invalid profile_and_level_indication
22082	Error	MPEG-2 video	Video Sequence	Invalid frame_rate_extension_n
22083	Error	MPEG-2 video	Video Sequence	Invalid frame_rate_extension_d
22086	Error	MPEG-2 video	Video Sequence	Invalid colour_primaries
22087	Error	MPEG-2 video	Video Sequence	Invalid transfer_characteristics
22088	Error	MPEG-2 video	Video Sequence	Invalid matrix_coefficients
22098	Error	MPEG-2 video	Macroblock	Invalid macroblock_stuffing
22099	Error	MPEG-2 video	Macroblock	Bad VLC for macroblock_type
22100	Error	MPEG-2 video	Macroblock	Bad VLC for macroblock_address_increment
22101	Error	MPEG-2 video	Macroblock	Bad VLC for motion_code
22102	Error	MPEG-2 video	Macroblock	Bad VLC for motion_residual
22103	Error	MPEG-2 video	Macroblock	Bad VLC for dmvector
22104	Error	MPEG-2 video	Macroblock	Bad VLC for coded_block_pattern_420
22105	Error	MPEG-2 video	Block	Bad VLC for dct_intradc_size_luma

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
22106	Error	MPEG-2 video	Block	Bad VLC for dct_intradc_size_chroma
22107	Error	MPEG-2 video	Block	Bad VLC for dct_intradc_differential
22111	Error	MPEG-2 video	Block	Invalid dct_escape_level
22112	Error	MPEG-2 video	Block	Bad VLC for dct_differential
22133	Error	MPEG-2 video	Picture	Invalid quantizer_matrix_value
22142	Error	MPEG-2 video	Picture	Invalid padding_byte
22155	Error	MPEG-2 video	Picture	Invalid units_of_seconds
22156	Error	MPEG-2 video	Picture	Invalid tens_of_seconds
22157	Error	MPEG-2 video	Picture	Invalid units_of_minutes
22158	Error	MPEG-2 video	Picture	Invalid tens_of_minutes
22159	Error	MPEG-2 video	Picture	Invalid units_of_hours
22160	Error	MPEG-2 video	Picture	Invalid tens_of_hours
22196	Error	MPEG-2 video	Slice	Too many macroblocks in picture
22197	Error	MPEG-2 video	Video Sequence	Unexpected start code found
22198	Error	MPEG-2 video	Macroblock	Motion vector out of range
22199	Error	MPEG-2 video	Block	DCT coefficient index out of bounds
22200	Error	MPEG-2 video	Video Sequence	No end-of-sequence start code found
22201	Error	MPEG-2 video	Picture	Premature end of picture
22202	Error	MPEG-2 video	Video Sequence	Unmatched field
22203	Error	MPEG-2 video	Video Sequence	I picture expected after GOP header
22204	Error	MPEG-2 video	Macroblock	Block uses forward prediction when closed_gop = 1
22205	Error	MPEG-2 video	Video Sequence	Too many luma samples per second
22206	Error	MPEG-2 video	Video Sequence	Frame size too large for Level constraints
22207	Error	MPEG-2 video	Video Sequence	Frame rate too high for Level constraints
22208	Error	MPEG-2 video	Video Sequence	Bit rate too high for Level constraints

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
22209	Error	MPEG-2 video	Video Sequence	VBV requirement too high for Level constraints
22210	Error	MPEG-2 video	Picture	Bad slice order
22211	Error	MPEG-2 video	Video Sequence	Repeated header differs from previous header
22212	Error	MPEG-2 video	Video Sequence	Reserved profile/level
22251	Error	MPEG-2 transport stream	MPEG-2 Transport Stream	Missing sync_byte
22252	Error	MPEG-2 transport stream	MPEG-2 Transport Stream	Packet has transport_error_indicator set
22253	Error	MPEG-2 transport stream	MPEG-2 Transport Stream	Invalid adaptation_field_control value
22254	Error	MPEG-2 transport stream	MPEG-2 Transport Stream	Invalid adaptation field
22255	Error	MPEG-2 transport stream	MPEG-2 Transport Stream	Invalid payload_unit_start_indicator value
22256	Error	MPEG-2 transport stream	MPEG-2 Transport Stream	Invalid adaptation_field_extension_length field
22257	Error	MPEG-2 transport stream	MPEG-2 Transport Stream	Incorrect adaptation_field_length field
22258	Error	MPEG-2 transport stream	MPEG-2 Transport Stream	Transport stream packet skipped
22259	Error	MPEG-2 transport stream	MPEG-2 Transport Stream	Unexpected continuity_counter
22260	Error	MPEG-2 transport stream	MPEG-2 Transport Stream	Failed whilst parsing PAT or PMT tables
22261	Error	MPEG-2 transport stream	MPEG-2 Transport Stream	New Program Association Table
23001	Error	MPEG-4 video	Visual Object Sequence	Reserved Profile/Level
23002	Error	MPEG-4 video	Video Object Plane	dct_dc_size value
23003	Error	MPEG-4 video	Video Object Plane	dct_dc_size_luminance value
23004	Error	MPEG-4 video	Video Object Plane	dct_dc_size_chrominance value
23005	Error	MPEG-4 video	Video Object Plane	More than 64 coefficients
23006	Error	MPEG-4 video	Video Object Layer	Reserved video_object_type_indication
23007	Error	MPEG-4 video	Video Object Layer	Reserved video_object_layer_verid

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
23008	Error	MPEG-4 video	Video Object Layer	Reserved video_object_layer_priority
23009	Error	MPEG-4 video	Video Object Layer	Reserved pixel aspect ratio
23010	Error	MPEG-4 video	Video Object Layer	par_width zero
23011	Error	MPEG-4 video	Video Object Layer	par_height zero
23012	Error	MPEG-4 video	Video Object Layer	Reserved chroma_format
23013	Error	MPEG-4 video	Video Object Layer	VBV Buffer size total zero
23014	Error	MPEG-4 video	Video Object Layer	VBV Bit rate total zero
23015	Error	MPEG-4 video	Video Object Layer	VBV Occupancy total zero
23016	Error	MPEG-4 video	Video Object Layer	video_object_layer_shape not permitted
23017	Error	MPEG-4 video	Video Object Layer	vop_time_increment_resolution is zero
23018	Error	MPEG-4 video	Video Object Layer	fixed_vop_time_increment greater than vop_time_increment_resolution
23019	Error	MPEG-4 video	Video Object Layer	VOP width greater than maximum allowed
23020	Error	MPEG-4 video	Video Object Layer	VOP width greater than maximum allowed
23021	Error	MPEG-4 video	Video Object Layer	Too many MBs for Profile/Level
23022	Error	MPEG-4 video	Video Object Layer	marker_bit is 0
23023	Error	MPEG-4 video	Video Object Layer	Interlace not allowed in ASP L0-L3
23024	Error	MPEG-4 video	Video Object Layer	Error loading intra_quant_matrix
23025	Error	MPEG-4 video	Video Object Layer	video_object_layer_verid not permitted
23026	Error	MPEG-4 video	Visual Object Sequence	Reserved video_format
23027	Error	MPEG-4 video	Visual Object Sequence	Reserved colour_primaries
23028	Error	MPEG-4 video	Visual Object Sequence	Reserved transfer_characteristics
23029	Error	MPEG-4 video	Visual Object Sequence	Reserved matrix_coefficients
23030	Error	MPEG-4 video	Group of VOPs	time_code_hours out of range
23031	Error	MPEG-4 video	Group of VOPs	time_code_minutes out of range
23032	Error	MPEG-4 video	Group of VOPs	time_code_seconds out of range

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
23033	Error	MPEG-4 video	Group of VOPs	broken_link is 1
23034	Error	MPEG-4 video	General	Start code error
23035	Error	MPEG-4 video	Visual Object Sequence	Missing user data
23036	Error	MPEG-4 video	Video Object Plane	Out of data
23037	Error	MPEG-4 video	Video Object Plane	Too many MBs in data partitioned VOP
23038	Error	MPEG-4 video	Video Object Plane	Quant is zero
23039	Error	MPEG-4 video	Video Object Plane	Quant is greater than 31
23040	Error	MPEG-4 video	Video Object Plane	Invalid RVLC
23041	Error	MPEG-4 video	Video Object Layer	Interlace not allowed in SP
23042	Error	MPEG-4 video	Video Object Layer	Method 1 quantisation not allowed in SP
23043	Error	MPEG-4 video	Video Object Layer	Quarter sample not allowed in SP
23044	Error	MPEG-4 video	Video Object Plane	B-VOPs present when low_delay = 1
23045	Error	MPEG-4 video	Video Object Plane	TCOEF ESCAPE sign is zero
23046	Error	MPEG-4 video	Video Object Plane	TCOEF LEVEL is zero
23047	Error	MPEG-4 video	Video Object Plane	TCOEF ESCAPE expected
23048	Error	MPEG-4 video	Video Object Layer	Invalid video object type
23049	Error	MPEG-4 video	Group of VOPs	Missing I-VOP after GOV Header
23050	Error	H.263 video, MPEG-4 video	General	Unexpected end of stream
23251	Error	MPEG-4 container	MPEG-4 Container layer	Bad atom size
23252	Error	MPEG-4 container	MPEG-4 Container layer	Parser error
23253	Error	MPEG-4 container	MPEG-4 Container layer	File structure integrity error
23254	Error	MPEG-4 container	MPEG-4 Container layer	Missing “mdat” box
23255	Error	MPEG-4 container	MPEG-4 Container layer	Misread atom
23256	Error	MPEG-4 container	MPEG-4 Container layer	Missing SPS and/or PPS
23500	Error	ADTS	ADTS Container layer	SSR Not Supported
23501	Error	ADTS	ADTS Container layer	Invalid LTP
24001	Error	H.264/AVC video	NAL unit	Incorrect forbidden_zero_bit
24002	Error	H.264/AVC video	NAL unit	Incorrect nal_ref_idc
24004	Error	H.264/AVC video	NAL unit	Incorrect rbsp_byte
24005	Error	H.264/AVC video	NAL unit	Incorrect emulation_prevention_three_byte
24006	Error	H.264/AVC video	RBSP.SPS	Incorrect profile_idc

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24010	Error	H.264/AVC video	RBSP.SPS	Incorrect reserved_zero_4bits
24011	Error	H.264/AVC video	RBSP.SPS	Incorrect level_idc
24012	Error	H.264/AVC video	RBSP	Incorrect seq_parameter_set_id
24013	Error	H.264/AVC video	RBSP.SPS	Incorrect log2_max_frame_num_minus4
24014	Error	H.264/AVC video	RBSP.SPS	Incorrect pic_order_cnt_type
24015	Error	H.264/AVC video	RBSP.SPS	Incorrect log2_max_pic_order_cnt_lsb_minus4
24017	Error	H.264/AVC video	RBSP.SPS	Incorrect offset_for_non_ref_pic
24018	Error	H.264/AVC video	RBSP.SPS	Incorrect offset_for_top_to_bottom_field
24020	Error	H.264/AVC video	RBSP.SPS	Incorrect offset_for_ref_frame
24021	Error	H.264/AVC video	RBSP.SPS	Incorrect num_ref_frames
24022	Error	H.264/AVC video	RBSP.SPS	Incorrect gaps_in_frame_num_value_allowed_flag
24023	Error	H.264/AVC video	RBSP.SPS	Incorrect pic_width_in_mbs_minus1
24024	Error	H.264/AVC video	RBSP.SPS	Incorrect pic_height_in_map_units_minus1
24025	Error	H.264/AVC video	RBSP.SPS	Incorrect frame_mbs_only_flag
24027	Error	H.264/AVC video	RBSP.SPS	Incorrect direct_8x8_inference_flag
24029	Error	H.264/AVC video	RBSP.SPS	Incorrect frame_crop_left_offset
24030	Error	H.264/AVC video	RBSP.SPS	Incorrect frame_crop_right_offset
24031	Error	H.264/AVC video	RBSP.SPS	Incorrect frame_crop_top_offset
24032	Error	H.264/AVC video	RBSP.SPS	Incorrect frame_crop_bottom_offset
24034	Error	H.264/AVC video	RBSP.PPS	Incorrect pic_parameter_set_id

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24035	Error	H.264/AVC video	RBSP.PPS	Incorrect entropy_coding_mode_flag
24038	Error	H.264/AVC video	RBSP.PPS	Incorrect slice_group_map_type
24039	Error	H.264/AVC video	RBSP.PPS	Incorrect run_length_minus1
24040	Error	H.264/AVC video	RBSP.PPS	Incorrect top_left
24041	Error	H.264/AVC video	RBSP.PPS	Incorrect bottom_right
24042	Error	H.264/AVC video	RBSP.PPS	Incorrect slice_group_change_direction_flag
24043	Error	H.264/AVC video	RBSP.PPS	Incorrect slice_group_change_rate_minus1
24044	Error	H.264/AVC video	RBSP.PPS	Incorrect pic_size_in_map_units_minus1
24045	Error	H.264/AVC video	RBSP.PPS	Incorrect slice_group_id
24046	Error	H.264/AVC video	RBSP	Incorrect num_ref_idx_l0_active_minus1
24047	Error	H.264/AVC video	RBSP	Incorrect num_ref_idx_l1_active_minus1
24048	Error	H.264/AVC video	RBSP.PPS	Incorrect weighted_pred_flag
24049	Error	H.264/AVC video	RBSP.PPS	Incorrect weighted_bipred_idc
24050	Error	H.264/AVC video	RBSP.PPS	Incorrect pic_init_qp_minus26
24051	Error	H.264/AVC video	RBSP.PPS	Incorrect pic_init_qs_minus26
24052	Error	H.264/AVC video	RBSP.PPS	Incorrect chroma_qp_index_offset
24055	Error	H.264/AVC video	RBSP.PPS	Incorrect redundant_pic_cnt_present_flag
24056	Error	H.264/AVC video	RBSP	Incorrect ff_byte
24057	Error	H.264/AVC video	RBSP	Incorrect last_payload_type_byte
24058	Error	H.264/AVC video	RBSP	Incorrect last_payload_size_byte
24059	Error	H.264/AVC video	RBSP	Incorrect primary_pic_type
24060	Error	H.264/AVC video	RBSP.Slice layer	Incorrect slice_id

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24061	Error	H.264/AVC video	RBSP.Slice layer	Incorrect redundant_pic_cnt
24062	Error	H.264/AVC video	RBSP	Incorrect cabac_zero_word
24063	Error	H.264/AVC video	NAL unit	Incorrect rbsp_stop_one_bit
24064	Error	H.264/AVC video	NAL unit	Incorrect rbsp_alignment_zero_bit
24065	Error	H.264/AVC video	NAL unit	Incorrect rbsp_trailing_bits
24066	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect first_mb_in_slice
24067	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect slice_type
24068	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect frame_num
24071	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect idr_pic_id
24072	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect pic_order_cnt_lsb
24073	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect delta_pic_order_cnt_bottom
24074	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect delta_pic_order_cnt
24077	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect cabac_init_idc
24078	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect slice_qp_delta
24080	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect slice_qs_delta
24081	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect disable_deblocking_filter_idc
24082	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect slice_alpha_c0_offset_div2
24083	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect slice_beta_offset_div2
24084	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect slice_group_change_cycle
24085	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect ref_pic_list_reordering_flag_l0
24086	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect reordering_of_pic_nums_idc

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24087	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect abs_diff_pic_num_minus1
24088	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect long_term_pic_num
24089	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect ref_pic_list_reordering_flag_l1
24090	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect luma_log2_weight_denom
24091	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect chroma_log2_weight_denom
24092	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect luma_weight_l0_flag
24093	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect luma_weight_l0
24094	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect luma_offset_l0
24095	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect chroma_weight_l0_flag
24096	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect chroma_weight_l0
24097	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect chroma_offset_l0
24098	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect luma_weight_l1_flag
24099	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect luma_weight_l1
24100	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect luma_offset_l1
24101	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect chroma_weight_l1_flag
24102	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect chroma_weight_l1
24103	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect chroma_offset_l1
24104	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect no_output_of_prior_pics_flag
24105	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect long_term_reference_flag

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24106	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect adaptive_ref_pic_marking_mode_flag
24107	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect memory_management_control_operation
24108	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect difference_of_pic_nums_minus1
24109	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect long_term_frame_idx
24110	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Incorrect max_long_term_frame_idx_plus1
24111	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect cabac_alignment_one_bit
24112	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect codIOffset
24113	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect mb_skip_run
24117	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect mb_type
24118	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect pcm_alignment_zero_bit
24120	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect coded_block_pattern
24121	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect mb_qp_delta
24122	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect prev_intra4x4_pred_mode_flag
24123	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect rem_intra4x4_pred_mode
24124	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect intra_chroma_pred_mode
24125	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect ref_idx_l0
24126	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect ref_idx_l1
24127	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect mvd_l0
24128	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect mvd_l1
24129	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect sub_mb_type
24132	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect level_prefix
24133	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect level_suffix
24134	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect total_zeros
24135	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect run_before
24139	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect coeff_abs_level_minus1
24141	Error	H.264/AVC video	Byte stream	Incorrect zero_byte

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24142	Error	H.264/AVC video	Byte stream	Incorrect start_code_prefix_one_3bytes
24143	Error	H.264/AVC video	RBSP.SEI	Incorrect bit_equal_to_one
24144	Error	H.264/AVC video	RBSP.SEI	Incorrect bit_equal_to_zero
24145	Error	H.264/AVC video	RBSP.SEI	Incorrect initial_cpb_removal_delay
24146	Error	H.264/AVC video	RBSP.SEI	Incorrect initial_cpb_removal_delay_offset
24147	Error	H.264/AVC video	RBSP.SEI	Incorrect cpb_removal_delay
24148	Error	H.264/AVC video	RBSP.SEI	Incorrect dpb_output_delay
24149	Error	H.264/AVC video	RBSP.SEI	Incorrect pic_struct
24150	Error	H.264/AVC video	RBSP.SEI	Incorrect clock_timestamp_flag
24151	Error	H.264/AVC video	RBSP.SEI	Incorrect ct_type
24152	Error	H.264/AVC video	RBSP.SEI	Incorrect nuit_field_based_flag
24153	Error	H.264/AVC video	RBSP.SEI	Incorrect counting_type
24154	Error	H.264/AVC video	RBSP.SEI	Incorrect full_timestamp_flag
24155	Error	H.264/AVC video	RBSP.SEI	Incorrect discontinuity_flag
24156	Error	H.264/AVC video	RBSP.SEI	Incorrect cnt_dropped_flag
24157	Error	H.264/AVC video	RBSP.SEI	Incorrect n_frames
24158	Error	H.264/AVC video	RBSP.SEI	Incorrect seconds_value
24159	Error	H.264/AVC video	RBSP.SEI	Incorrect minutes_value
24160	Error	H.264/AVC video	RBSP.SEI	Incorrect hours_value
24161	Error	H.264/AVC video	RBSP.SEI	Incorrect seconds_flag
24162	Error	H.264/AVC video	RBSP.SEI	Incorrect minutes_flag
24163	Error	H.264/AVC video	RBSP.SEI	Incorrect hours_flag
24164	Error	H.264/AVC video	RBSP.SEI	Incorrect time_offset
24165	Error	H.264/AVC video	RBSP.SEI	Incorrect pan_scan_rect_id
24166	Error	H.264/AVC video	RBSP.SEI	Incorrect pan_scan_rect_cancel_flag
24167	Error	H.264/AVC video	RBSP.SEI	Incorrect pan_scan_cnt_minus1
24168	Error	H.264/AVC video	RBSP.SEI	Incorrect pan_scan_rect_left_offset

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24169	Error	H.264/AVC video	RBSP.SEI	Incorrect pan_scan_rect_right_offset
24170	Error	H.264/AVC video	RBSP.SEI	Incorrect pan_scan_rect_top_offset
24171	Error	H.264/AVC video	RBSP.SEI	Incorrect pan_scan_rect_bottom_offset
24172	Error	H.264/AVC video	RBSP.SEI	Incorrect pan_scan_rect_repetition_period
24173	Error	H.264/AVC video	RBSP.SEI	Incorrect itu_t_t35_country_code
24174	Error	H.264/AVC video	RBSP.SEI	Incorrect itu_t_t35_country_code_extension_byte
24175	Error	H.264/AVC video	RBSP.SEI	Incorrect itu_t_t35_payload_byte
24176	Error	H.264/AVC video	RBSP.SEI	Incorrect uuid_iso_iec_11578
24177	Error	H.264/AVC video	RBSP.SEI	Incorrect user_data_payload_byte
24178	Error	H.264/AVC video	RBSP.SEI	Incorrect recovery_frame_cnt
24179	Error	H.264/AVC video	RBSP.SEI	Incorrect exact_match_flag
24180	Error	H.264/AVC video	RBSP.SEI	Incorrect broken_link_flag
24181	Error	H.264/AVC video	RBSP.SEI	Incorrect changing_slice_group_idc
24182	Error	H.264/AVC video	RBSP.SEI	Incorrect original_idr_flag
24183	Error	H.264/AVC video	RBSP.SEI	Incorrect original_frame_num
24184	Error	H.264/AVC video	RBSP.SEI	Incorrect original_field_pic_flag
24185	Error	H.264/AVC video	RBSP.SEI	Incorrect original_field_bottom_flag
24186	Error	H.264/AVC video	RBSP.SEI	Incorrect target_frame_num
24187	Error	H.264/AVC video	RBSP.SEI	Incorrect spare_field_flag
24188	Error	H.264/AVC video	RBSP.SEI	Incorrect target_bottom_field_flag
24189	Error	H.264/AVC video	RBSP.SEI	Incorrect num_spare_pics_minus1

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24190	Error	H.264/AVC video	RBSP.SEI	Incorrect delta_spare_frame_num
24191	Error	H.264/AVC video	RBSP.SEI	Incorrect spare_bottom_field_flag
24192	Error	H.264/AVC video	RBSP.SEI	Incorrect spare_area_idc
24193	Error	H.264/AVC video	RBSP.SEI	Incorrect spare_unit_flag
24194	Error	H.264/AVC video	RBSP.SEI	Incorrect zero_run_length
24195	Error	H.264/AVC video	RBSP.SEI	Incorrect scene_info_present_flag
24196	Error	H.264/AVC video	RBSP.SEI	Incorrect scene_id
24197	Error	H.264/AVC video	RBSP.SEI	Incorrect scene_transition_type
24198	Error	H.264/AVC video	RBSP.SEI	Incorrect second_scene_id
24199	Error	H.264/AVC video	RBSP.SEI	Incorrect sub_seq_layer_num
24200	Error	H.264/AVC video	RBSP.SEI	Incorrect sub_seq_id
24201	Error	H.264/AVC video	RBSP.SEI	Incorrect first_ref_pic_flag
24202	Error	H.264/AVC video	RBSP.SEI	Incorrect leading_non_ref_pic_flag
24203	Error	H.264/AVC video	RBSP.SEI	Incorrect last_pic_flag
24204	Error	H.264/AVC video	RBSP.SEI	Incorrect sub_seq_frame_num_flag
24205	Error	H.264/AVC video	RBSP.SEI	Incorrect sub_seq_frame_num
24206	Error	H.264/AVC video	RBSP.SEI	Incorrect num_sub_seq_layers_minus1
24207	Error	H.264/AVC video	RBSP.SEI	Incorrect accurate_statistics_flag
24208	Error	H.264/AVC video	RBSP.SEI	Incorrect average_bit_rate
24209	Error	H.264/AVC video	RBSP.SEI	Incorrect average_frame_rate
24210	Error	H.264/AVC video	RBSP.SEI	Incorrect duration_flag
24211	Error	H.264/AVC video	RBSP.SEI	Incorrect sub_seq_duration
24212	Error	H.264/AVC video	RBSP.SEI	Incorrect average_rate_flag
24213	Error	H.264/AVC video	RBSP.SEI	Incorrect num_referenced_subseqs
24214	Error	H.264/AVC video	RBSP.SEI	Incorrect ref_sub_seq_layer_num

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24215	Error	H.264/AVC video	RBSP.SEI	Incorrect ref_sub_seq_id
24216	Error	H.264/AVC video	RBSP.SEI	Incorrect ref_sub_seq_direction
24217	Error	H.264/AVC video	RBSP.SEI	Incorrect full_frame_freeze_repetition_period
24218	Error	H.264/AVC video	RBSP.SEI	Incorrect snapshot_id
24219	Error	H.264/AVC video	RBSP.SEI	Incorrect progressive_refinement_id
24220	Error	H.264/AVC video	RBSP.SEI	Incorrect num_refinement_steps_minus1
24221	Error	H.264/AVC video	RBSP.SEI	Incorrect num_slice_groups_in_set_minus1
24222	Error	H.264/AVC video	RBSP.SEI	Incorrect exact_sample_value_match_flag
24223	Error	H.264/AVC video	RBSP.SEI	Incorrect pan_scan_rect_flag
24224	Error	H.264/AVC video	RBSP.SEI	Incorrect reserved_sei_message_payload_byte
24225	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect aspect_ratio_info_present_flag
24226	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect aspect_ratio_idc
24227	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect sar_width
24228	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect sar_height
24229	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect overscan_info_present_flag
24230	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect overscan_appropriate_flag
24231	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect video_signal_type_present_flag
24232	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect video_format
24233	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect video_full_range_flag
24234	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect colour_description_present_flag
24235	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect colour_primaries
24236	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect transfer_characteristics
24237	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect matrix_coefficients

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24238	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect chroma_loc_info-_present_flag
24239	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect chroma_sample_loc_type_top_field
24240	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect chroma_sample_loc_type_bottom_field
24241	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect timing_info_present_flag
24242	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect num_units_in_tick
24243	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect time_scale
24244	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect fixed_frame_rate_flag
24245	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect nal_hrd_parameters_present_flag
24246	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect vcl_hrd_parameters_present_flag
24247	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect low_delay_hrd_flag
24248	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect pic_struct_present_flag
24249	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect bitstream_restriction_flag
24250	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect motion_vectors_over_pic_boundaries_flag
24251	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect max_bytes_per_pic_denom
24252	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect max_bits_per_mb_denom
24253	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect log2_max_mv_length_horizontal
24254	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect log2_max_mv_length_vertical
24255	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect num_reorder_frames
24256	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect max_dec_frame_buffering
24257	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect cpb_cnt_minus1

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24258	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect bit_rate_scale
24259	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect cpb_size_scale
24260	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect bit_rate_value_minus1
24261	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect cpb_size_value_minus1
24262	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect cbr_flag
24263	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect initial_cpb_removal_delay_length_minus1
24264	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect cpb_removal_delay_length_minus1
24265	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect dpb_output_delay_length_minus1
24266	Error	H.264/AVC video	RBSP.SPS.VUI	Incorrect time_offset_length
24267	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect bottom_mb_field_decoding_flag
24269	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Failed to find NumCoeff/TrailingOnes
24270	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Failed to find NumCoeff/TrailingOnes ChromaDC
24271	Error	H.264/AVC video	RBSP.Slice layer.Slice data	VLC parse error: Level codeword
24272	Error	H.264/AVC video	RBSP.Slice layer.Slice data	VLC parse error: Total Zeros codeword
24273	Error	H.264/AVC video	RBSP.Slice layer.Slice data	VLC parse error: Total Zeros Chroma DC codeword
24274	Error	H.264/AVC video	RBSP.Slice layer.Slice data	VLC parse error: Run codeword
24275	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Unexpected HOR_PRED_8 chroma intra prediction mode
24276	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Unexpected VERT_PRED_8 chroma intra prediction mode
24277	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Unexpected PLANE_8 chroma intra prediction mode

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24278	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Unexpected HOR_PRED_16 intra prediction mode
24279	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Unexpected VERT_PRED_16 intra prediction mode
24280	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Unexpected PLANE_16 intra prediction mode
24282	Error	H.264/AVC video	RBSP	Non-zero frame_num in idr pix
24283	Error	H.264/AVC video	RBSP	Duplicate frame_num in short-term reference picture buffer
24284	Error	H.264/AVC video	RBSP	Invalid frame store type
24285	Error	H.264/AVC video	RBSP	Empty decoded picture buffer
24286	Error	H.264/AVC video	RBSP	POC Out of order.
24288	Error	H.264/AVC video	RBSP.SEI	Reserved picture_structure
24289	Error	H.264/AVC video	RBSP.Slice layer	Invalid num_slice_group_map_units_minus1
24290	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Invalid block type
24291	Error	H.264/AVC video	RBSP	Invalid remapping_of_pic_nums_idc command
24292	Error	H.264/AVC video	RBSP	Invalid memory_management_control_operation
24293	Error	H.264/AVC video	RBSP	Incorrect pic_order_cnt_type
24294	Error	H.264/AVC video	NAL unit	Missing startcode in NAL
24295	Error	H.264/AVC video	NAL unit	Error reading NALU
24296	Error	H.264/AVC video	NAL unit	All zero data sequence in RBSP
24297	Error	H.264/AVC video	RBSP.Slice layer	Invalid slice type
24298	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Parse error: 2x2 DC Chroma codeword
24299	Error	H.264/AVC video	RBSP	Expected Instantaneous Decoding Refresh picture
24300	Error	H.264/AVC video	RBSP	Unexpected Instantaneous Decoding Refresh picture
24301	Error	H.264/AVC video	RBSP	Incorrect adaptive_ref_pic_buffering_flag

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24302	Error	H.264/AVC video	NAL unit	Empty Raw Byte Sequence Payload
24303	Error	H.264/AVC video	NAL unit	Reading too many bits from Raw Byte Sequence Payload
24304	Error	H.264/AVC video	RBSP	Invalid Picture Parameter Set
24305	Error	H.264/AVC video	RBSP	Invalid Sequence Parameter Set
24306	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Picture missing in stream
24307	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Too few entries in list reordering
24308	Error	H.264/AVC video	RBSP.Slice layer	Macroblock reference unavailable
24309	Error	H.264/AVC video	RBSP.SPS	Frame area too large for Level
24310	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Too many entries in list reordering
24311	Error	H.264/AVC video	RBSP.Slice layer.Slice header	Too few entries in list reordering
24312	Error	H.264/AVC video	RBSP.SEI	No active SPS
24313	Error	H.264/AVC video	RBSP.SPS	Missing VUI information in active SPS
24314	Error	H.264/AVC video	RBSP.SEI	Incorrect Supplementary Enhancement Information message size
24315	Error	H.264/AVC video	RBSP	Full decoded picture buffer
24316	Error	H.264/AVC video	NAL unit	Access Delimiter NALU not at start of access unit
24317	Error	H.264/AVC video	NAL unit	SEI NAL Unit does not precede primary coded picture
24318	Error	H.264/AVC video	RBSP.SEI	Badly positioned Buffering Period SEI message
24319	Error	H.264/AVC video	NAL unit	Bad ordering of redundant pictures
24320	Error	H.264/AVC video	NAL unit	Badly positioned End Of Sequence NAL Unit
24321	Error	H.264/AVC video	NAL unit	Badly positioned End Of Stream NAL Unit
24322	Error	H.264/AVC video	NAL unit	NAL Unit should not precede VCL NAL Unit

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24323	Error	H.264/AVC video	RBSP.SPS	Active SPS replaced with non-identical SPS
24324	Error	H.264/AVC video	RBSP.Slice layer	Bad slice order
24325	Error	H.264/AVC video	RBSP.SPS	Bad cropping rectangle in SPS
24327	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Motion vector component exceeds level limit
24328	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Divergent motion vectors: MaxSubMbRectSize exceeded
24329	Error	H.264/AVC video	NAL unit	Too many macroblocks per second
24330	Error	H.264/AVC video	NAL unit	Minimum compression ratio not met
24331	Error	H.264/AVC video	NAL unit	Slice rate limit exceeded
24332	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Too many motion vectors per two consecutive macroblocks
24333	Error	H.264/AVC video	RBSP.Slice layer	Macroblock too large
24334	Error	H.264/AVC video	NAL unit	No suitable HRD "bucket" for given level
24335	Error	H.264/AVC video	RBSP.Slice layer.Slice data	MinLumaBiPredSize constraint disobeyed
24336	Error	H.264/AVC video	NAL unit	Data partitioned NALU disallowed by profile
24337	Error	H.264/AVC video	Picture Layer	Field pair has differing frame number
24338	Error	H.264/AVC video	Picture Layer	Two fields in a pair have the same parity
24339	Error	H.264/AVC video	Picture Layer	A field was expected but not found
24340	Error	H.264/AVC video	NAL unit	Sequence does not begin with an IDR NALU
24341	Error	H.264/AVC video	RBSP	Reference frame for long term marking not found
24342	Error	H.264/AVC video	RBSP.SPS	Incorrect profile_idc
24343	Error	H.264/AVC video	RBSP.SPS	Invalid constraint_setx_flag
24344	Error	H.264/AVC video	RBSP.SPS	Intermediate transform values out of range
24345	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect pcm_byte

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24346	Error	H.264/AVC video	General	Frame size exceeds the limit for AVC Intra
24803	Error	H.264/AVC video	RBSP.SPS	Incorrect delta_scale
24804	Error	H.264/AVC video	RBSP.SPS	Incorrect chroma_format_idc
24805	Error	H.264/AVC video	RBSP.SPS	Incorrect residual_colour_transform_flag
24806	Error	H.264/AVC video	RBSP.SPS	Incorrect bit_depth_luma_minus8
24807	Error	H.264/AVC video	RBSP.SPS	Incorrect bit_depth_chroma_minus8
24808	Error	H.264/AVC video	RBSP.SPS	Incorrect qpprime_y_zero_transform_bypass_flag
24809	Error	H.264/AVC video	RBSP.SPS	Incorrect seq_scaling_matrix_present_flag
24810	Error	H.264/AVC video	RBSP.SPS	Incorrect seq_scaling_list_present_flag
24811	Error	H.264/AVC video	RBSP.PPS	Incorrect transform_8x8_mode_flag
24812	Error	H.264/AVC video	RBSP.PPS	Incorrect pic_scaling_matrix_present_flag
24813	Error	H.264/AVC video	RBSP.PPS	Incorrect pic_scaling_list_present_flag
24814	Error	H.264/AVC video	RBSP.PPS	Incorrect second_chroma_qp_index_offset
24815	Error	H.264/AVC video	Byte stream	Incorrect leading_zero_8bits
24816	Error	H.264/AVC video	RBSP.SEI	Incorrect film_grain_characteristics_cancel_flag
24817	Error	H.264/AVC video	RBSP.SEI	Incorrect model_id
24818	Error	H.264/AVC video	RBSP.SEI	Incorrect separate_colour_description_present_flag
24819	Error	H.264/AVC video	RBSP.SEI	Incorrect film_grain_bit_depth_luma_minus8
24820	Error	H.264/AVC video	RBSP.SEI	Incorrect film_grain_bit_depth_chroma_minus8
24821	Error	H.264/AVC video	RBSP.SEI	Incorrect film_grain_full_range_flag

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24822	Error	H.264/AVC video	RBSP.SEI	Incorrect film_grain_colour_primaries
24823	Error	H.264/AVC video	RBSP.SEI	Incorrect film_grain_transfer_characteristics
24824	Error	H.264/AVC video	RBSP.SEI	Incorrect film_grain_matrix_coefficients
24825	Error	H.264/AVC video	RBSP.SEI	Incorrect blending_mode_id
24826	Error	H.264/AVC video	RBSP.SEI	Incorrect log2_scale_factor
24827	Error	H.264/AVC video	RBSP.SEI	Incorrect comp_model_present_flag
24828	Error	H.264/AVC video	RBSP.SEI	Incorrect num_intensity_intervals_minus1
24829	Error	H.264/AVC video	RBSP.SEI	Incorrect num_model_values_minus1
24830	Error	H.264/AVC video	RBSP.SEI	Incorrect intensity_interval_lower_bound
24831	Error	H.264/AVC video	RBSP.SEI	Incorrect intensity_interval_upper_bound
24832	Error	H.264/AVC video	RBSP.SEI	Incorrect comp_model_value
24833	Error	H.264/AVC video	RBSP.SEI	Incorrect film_grain_characteristics_repetition_period
24834	Error	H.264/AVC video	RBSP.SEI	Incorrect deblocking_display_preference_cancel_flag
24835	Error	H.264/AVC video	RBSP.SEI	Incorrect display_prior_to_deblocking_preferred_flag
24836	Error	H.264/AVC video	RBSP.SEI	Incorrect dec_frame_buffering_constraint_flag
24837	Error	H.264/AVC video	RBSP.SEI	Incorrect deblocking_display_preference_repetition_period
24838	Error	H.264/AVC video	RBSP.SEI	Incorrect field_views_flag
24839	Error	H.264/AVC video	RBSP.SEI	Incorrect top_field_is_left_view_flag
24840	Error	H.264/AVC video	RBSP.SEI	Incorrect current_frame_is_left_view_flag

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24841	Error	H.264/AVC video	RBSP.SEI	Incorrect next_frame_is_second_view_flag
24842	Error	H.264/AVC video	RBSP.SEI	Incorrect left_view_self_contained_flag
24843	Error	H.264/AVC video	RBSP.SEI	Incorrect right_view_self_contained_flag
24844	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect transform_size_8x8_flag
24845	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect pcm_sample_luma
24846	Error	H.264/AVC video	RBSP.Slice layer.Slice data	Incorrect pcm_sample_chroma
24847	Error	H.264/AVC video	Byte stream	Incorrect trailing_zero_8bits
24848	Error	H.264/AVC video	RBSP.SEI	Incorrect tone_map_id
24849	Error	H.264/AVC video	RBSP.SEI	Incorrect tone_map_cancel_flag
24850	Error	H.264/AVC video	RBSP.SEI	Incorrect tone_map_repetition_period
24851	Error	H.264/AVC video	RBSP.SEI	Incorrect coded_data_bit_depth
24852	Error	H.264/AVC video	RBSP.SEI	Incorrect target_bit_depth
24853	Error	H.264/AVC video	RBSP.SEI	Incorrect model_id
24854	Error	H.264/AVC video	RBSP.SEI	Incorrect min_value
24855	Error	H.264/AVC video	RBSP.SEI	Incorrect max_value
24856	Error	H.264/AVC video	RBSP.SEI	Incorrect sigmoid_midpoint
24857	Error	H.264/AVC video	RBSP.SEI	Incorrect sigmoid_width
24858	Error	H.264/AVC video	RBSP.SEI	Incorrect start_of_coded_interval
24859	Error	H.264/AVC video	RBSP.SEI	Incorrect num_pivots
24860	Error	H.264/AVC video	RBSP.SEI	Incorrect coded_pivot_value
24861	Error	H.264/AVC video	RBSP.SEI	Incorrect target_pivot_value
24862	Error	H.264/AVC video	RBSP.SEI	Incorrect filter_hint_size_y
24863	Error	H.264/AVC video	RBSP.SEI	Incorrect filter_hint_size_x
24864	Error	H.264/AVC video	RBSP.SEI	Incorrect filter_hint_type
24865	Error	H.264/AVC video	RBSP.SEI	Incorrect filter_hint

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
24866	Error	H.264/AVC video	RBSP.SEI	Incorrect additional_extension_flag
25001	Error	YUV video	General	Incomplete frame read
25250	Error	Dolby-E	Dolby-E Frame	Dolby-E CRC Check Failed
25251	Error	Dolby-E	Dolby-E Frame	Couldn't read Dolby-E frame
25501	Error	WMA	WMA Frame	Bitstream Corruption
26000	Error	VC-1 video	Sequence Layer	Invalid profile
26001	Error	VC-1 video	Sequence Layer	Invalid level
26002	Error	VC-1 video	Sequence Layer	Invalid chromaformat
26012	Error	VC-1 video	Sequence Layer	Invalid reserved
26017	Error	VC-1 video	Sequence Layer	Invalid aspect_ratio
26022	Error	VC-1 video	Sequence Layer	Invalid frameratenr
26023	Error	VC-1 video	Sequence Layer	Invalid frameratedr
26026	Error	VC-1 video	Sequence Layer	Invalid color_prim
26027	Error	VC-1 video	Sequence Layer	Invalid transfer_char
26028	Error	VC-1 video	Sequence Layer	Invalid matrix_coef
26035	Error	VC-1 video	Picture Layer	Bad VLC for fcm
26036	Error	VC-1 video	Picture Layer	Bad VLC for ptype
26049	Error	VC-1 video	Picture Layer	Invalid pqindex
26055	Error	VC-1 video	Picture Layer	Bad VLC for imode
26057	Error	VC-1 video	Picture Layer	Bad VLC for condover
26058	Error	VC-1 video	Picture Layer	Bad VLC for transacfrm
26059	Error	VC-1 video	Picture Layer	Bad VLC for transacfrm2
26061	Error	VC-1 video	Picture Layer	Bad VLC for bfraction
26066	Error	VC-1 video	Picture Layer	Bad VLC for norm2
26067	Error	VC-1 video	Picture Layer	Bad VLC for diff2
26068	Error	VC-1 video	Picture Layer	Bad VLC for norm6
26069	Error	VC-1 video	Picture Layer	Bad VLC for diff6
26070	Error	VC-1 video	Picture Layer	Bad VLC for mvrange
26078	Error	VC-1 video	Picture Layer	Bad VLC for mvmode
26079	Error	VC-1 video	Picture Layer	Bad VLC for mvmode2
26080	Error	VC-1 video	Picture Layer	Bad VLC for mvtab
26081	Error	VC-1 video	Picture Layer	Bad VLC for cbptab
26084	Error	VC-1 video	Macroblock Layer	Bad VLC for mqdiff
26088	Error	VC-1 video	Slice Layer	Invalid slice_addr
26089	Error	VC-1 video	Slice Layer	Bad VLC for unknown_huffman

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
26090	Error	VC-1 video	Macroblock Layer	Bad VLC for cbpcy
26091	Error	VC-1 video	Block Layer	Bad VLC for dccoef
26092	Error	VC-1 video	Block Layer	Bad VLC for dccoefesc
26096	Error	VC-1 video	Block Layer	Bad VLC for esclvlsz
26098	Error	VC-1 video	Block Layer	Bad VLC for esclvl
26099	Error	VC-1 video	Block Layer	Bad VLC for escrun
26100	Error	VC-1 video	Block Layer	Bad VLC for escmode
26104	Error	VC-1 video	Block Layer	Bad VLC for accoef1
26105	Error	VC-1 video	Block Layer	Bad VLC for accoef2
26106	Error	VC-1 video	Macroblock Layer	Bad VLC for mvtab_index
26107	Error	VC-1 video	Macroblock Layer	Bad VLC for dmv_x
26108	Error	VC-1 video	Macroblock Layer	Bad VLC for dmv_y
26112	Error	VC-1 video	Macroblock Layer	Bad VLC for ttmb
26113	Error	VC-1 video	Block Layer	Bad VLC for ttblk
26114	Error	VC-1 video	Block Layer	Bad VLC for subblkpat
26116	Error	VC-1 video	Macroblock Layer	Bad VLC for bmvtype
26124	Error	VC-1 video	Entry Point Header	Invalid dquant
26127	Error	VC-1 video	Entry Point Header	Invalid quantizer
26137	Error	VC-1 video	Picture Layer	Bad VLC for mbmode
26140	Error	VC-1 video	Macroblock Layer	Bad VLC for 2mvbp
26141	Error	VC-1 video	Macroblock Layer	Bad VLC for 4mvbp
26142	Error	VC-1 video	Picture Layer	Bad VLC for dmvrange
26147	Error	VC-1 video	Picture Layer	Bad VLC for mbmodetab
26151	Error	VC-1 video	Sequence Layer	Invalid startcode_prefix
26152	Error	VC-1 video	Sequence Layer	Invalid startcode_suffix
26156	Error	VC-1 video	Picture Layer	Invalid bf
26160	Error	VC-1 video	Sequence Layer	Invalid res_sm
26161	Error	VC-1 video	Sequence Layer	Invalid res_rtm_flag
26162	Error	VC-1 video	Sequence Layer	Invalid res_x8
26164	Error	VC-1 video	Sequence Layer	Invalid res_fasttx
26165	Error	VC-1 video	Sequence Layer	Invalid res_transtab
26169	Error	VC-1 video	Picture Layer	Bad VLC for refdist
26176	Error	VC-1 video	Picture Layer	Bad VLC for intcompfield
26179	Error	VC-1 video	Sequence Layer	Invalid flushing_zero_bit
26180	Error	VC-1 video	Sequence Layer	Invalid flushing_one_bit
26250	Error	ASF	ASF Container layer	ASF Container Error
26364	Error	VC-1 video	Block Layer	Too many coefficients in block

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
26365	Error	VC-1 video	Slice Layer	Unexpected slice start address
26366	Error	VC-1 video	Picture Layer	Mquant out of range
26367	Error	VC-1 video	Sequence Layer	Profile violation
26368	Error	VC-1 video	Sequence Layer	Unordered HRD parameters
26369	Error	VC-1 video	Entry Point Header	broken_link should be 0
26370	Error	VC-1 video	Entry Point Header	Frame size change not indicated
26371	Error	VC-1 video	Entry Point Header	Maximum frame size exceeded
26372	Error	VC-1 video	Entry Point Header	Range mapping changed without CLOSED_ENTRY=1
26373	Error	VC-1 video	Macroblock Layer	Intra block mode invalid
26374	Error	VC-1 video	Picture Layer	Frame count not consecutive
26375	Error	VC-1 video	Picture Layer	Range reduction different to that of next anchor
26376	Error	VC-1 video	Picture Layer	B Frame MV range smaller than next anchor
26377	Error	VC-1 video	Picture Layer	Picture resolution different from preceding I frame
26378	Error	VC-1 video	Picture Layer	Unexpected frame coding mode
26379	Error	VC-1 video	Picture Layer	RNDCTRL must be 0 in I pictures
26380	Error	VC-1 video	Picture Layer	Pan scan information not found
26381	Error	VC-1 video	Picture Layer	Missing start code
26501	Error	Parameter	Audio Parameter Check	Test for attribute AAC SBR Information failed
26502	Error	Parameter	Audio Parameter Check	Test for attribute AC3 Nominal Bit Rate failed
26503	Error	Parameter	Audio Parameter Check	Test for attribute Audio Bits per Second failed
26504	Error	Parameter	Audio Parameter Check	Test for attribute Audio Length in Seconds failed
26505	Error	Parameter	Audio Parameter Check	Test for attribute MPEG2 Error Protection failed
26506	Error	Parameter	Audio Parameter Check	Test for attribute MPEG2 Stereo Coding failed

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
26507	Error	Parameter	Audio Parameter Check	Test for attribute MPEG2 Variable Bit Rate failed
26508	Error	Parameter	Audio Parameter Check	Test for attribute Number of Audio Channels failed
26509	Error	Parameter	Audio Parameter Check	Test for attribute Audio Profile failed
26510	Error	Parameter	Audio Parameter Check	Test for attribute Audio Sample Depth failed
26511	Error	Parameter	Audio Parameter Check	Test for attribute Audio Sample Rate failed
26512	Error	Parameter	Audio Parameter Check	Test for attribute Uncompressed Audio Little-Endian failed
26513	Error	Parameter	Container Parameter Check	Test for attribute Bits per Second (system) failed
26514	Error	Parameter	Container Parameter Check	Test for attribute System Length in Bytes failed
26515	Error	Parameter	Container Parameter Check	Test for attribute System Length in Seconds failed
26516	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Program Stream Has Audio Stream failed
26517	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Program Stream Has Pack Header failed
26518	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Program Stream Has Padding Stream failed
26519	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Program Stream Has Pinnacle VBI failed
26520	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Program Stream Has Private Stream 1 failed
26521	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Program Stream Has Private Stream 2 failed
26522	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Program Stream Has Program Stream Directory failed

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
26523	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Program Stream Has Program Stream Map failed
26524	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Program Stream Has System Header failed
26525	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Program Stream Has Video Stream failed
26526	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Transport Stream Has DVB Closed Caption Information failed
26527	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Transport Stream Has DVB Teletext Information failed
26528	Error	Parameter	Container Parameter Check	Test for attribute MPEG2 Transport Stream Packet Size failed
26529	Error	Parameter	Container Parameter Check	Test for attribute MXF Operational Pattern failed
26530	Error	Parameter	Container Parameter Check	Test for attribute Number of Audio Streams failed
26531	Error	Parameter	Container Parameter Check	Test for attribute Number of Video Streams failed
26532	Error	Parameter	Video Parameter Check	Test for attribute AVC Level failed
26533	Error	Parameter	Video Parameter Check	Test for attribute AVC Profile failed
26534	Error	Parameter	Video Parameter Check	Test for attribute AVC Profile (constraint set 0 flag) failed
26535	Error	Parameter	Video Parameter Check	Test for attribute AVC Profile (constraint set 1 flag) failed
26536	Error	Parameter	Video Parameter Check	Test for attribute AVC Profile (constraint set 2 flag) failed
26537	Error	Parameter	Video Parameter Check	Test for attribute Average Video Frame Rate failed

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
26538	Error	Parameter	Video Parameter Check	Test for attribute Video Bidirectional Prediction failed
26539	Error	Parameter	Video Parameter Check	Test for attribute Video Forward Prediction failed
26540	Error	Parameter	Video Parameter Check	Test for attribute Video Bits per Second failed
26541	Error	Parameter	Video Parameter Check	Test for attribute Video Colour Format failed
26542	Error	Parameter	Video Parameter Check	Test for attribute Video Colour Depth failed
26543	Error	Parameter	Video Parameter Check	Test for attribute Video Display Aspect Ratio failed
26544	Error	Parameter	Video Parameter Check	Test for attribute Video Frame Height failed
26545	Error	Parameter	Video Parameter Check	Test for attribute Video Frame Width failed
26546	Error	Parameter	Video Parameter Check	Test for attribute Video Interlaced failed
26547	Error	Parameter	Video Parameter Check	Test for attribute Video Length in Seconds failed
26548	Error	Parameter	Video Parameter Check	Test for attribute MPEG2 Copyrighted failed
26549	Error	Parameter	Video Parameter Check	Test for attribute MPEG2 Copyright Extension failed
26550	Error	Parameter	Video Parameter Check	Test for attribute MPEG2 Copyright Original/Copy failed
26551	Error	Parameter	Video Parameter Check	Test for attribute MPEG2 Copyright Number failed
26552	Error	Parameter	Video Parameter Check	Test for attribute MPEG2 Has Sequence Display Extension failed
26553	Error	Parameter	Video Parameter Check	Test for attribute MPEG2 Level failed
26554	Error	Parameter	Video Parameter Check	Test for attribute MPEG2 Nominal Bit Rate failed
26555	Error	Parameter	Video Parameter Check	Test for attribute MPEG2 VBV Buffer Size failed
26556	Error	Parameter	Video Parameter Check	Test for attribute MPEG4 GOV Header failed

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
26558	Error	Parameter	Video Parameter Check	Test for attribute Video Level failed
26559	Error	Parameter	Video Parameter Check	Test for attribute MPEG4 Uses 4MV failed
26560	Error	Parameter	Video Parameter Check	Test for attribute MPEG4 Uses AC Prediction failed
26561	Error	Parameter	Video Parameter Check	Test for attribute MPEG4 Uses Data Partitioning failed
26562	Error	Parameter	Video Parameter Check	Test for attribute MPEG4 Uses GMC failed
26563	Error	Parameter	Video Parameter Check	Test for attribute MPEG4 Uses Quarter Sample failed
26564	Error	Parameter	Video Parameter Check	Test for attribute MPEG4 Uses RVLC failed
26565	Error	Parameter	Video Parameter Check	Test for attribute MPEG4 Uses Resync Marker failed
26566	Error	Parameter	Video Parameter Check	Test for attribute MPEG4 Uses Visual Object Header failed
26567	Error	Parameter	Video Parameter Check	Test for attribute MPEG4 Uses Video Object Sequence Header failed
26568	Error	Parameter	Video Parameter Check	Test for attribute Video Profile failed
26569	Error	Parameter	Video Parameter Check	Test for attribute Video Sample Aspect Ratio failed
26570	Error	Parameter	Video Parameter Check	Test for attribute Video Standard failed
26571	Error	Parameter	Video Parameter Check	Test for attribute Uses CABAC failed
26572	Error	Parameter	Video Parameter Check	Test for attribute Uses CAVLC failed
26573	Error	Parameter	Video Parameter Check	Test for attribute Uses Data Partitioning failed
26574	Error	Parameter	Video Parameter Check	Test for attribute Uses Non DP Slices failed
26575	Error	Parameter	Video Parameter Check	Test for attribute VC1 Uses Intensity Compensation failed
26576	Error	Parameter	Video Parameter Check	Test for attribute VC1 Uses Loop Filter failed

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
26577	Error	Parameter	Video Parameter Check	Test for attribute VC1 Uses Multi-Res failed
26578	Error	Parameter	Video Parameter Check	Test for attribute VC1 Uses Range Mapping failed
26579	Error	Parameter	Audio Parameter Check	Test for attribute AC3 Audio Coding Mode failed
26580	Error	Parameter	Audio Parameter Check	Test for attribute AC3 Audio Low Frequency Effects Channel failed
26581	Error	Parameter	Audio Parameter Check	Test for attribute Program Sequence failed
26582	Error	Parameter	Audio Parameter Check	Test for attribute Frame Rate failed
26583	Error	Parameter	Audio Parameter Check	Test for attribute Audio Standard failed
26584	Error	Parameter	Video Parameter Check	Test for attribute Video Type failed
26585	Error	Parameter	Audio Parameter Check	Test for attribute Audio Track Index failed
26586	Error	Parameter	Container Parameter Check	Test for attribute Video Duration Minus Audio Duration failed
26587	Error	Parameter	Video Parameter Check	Test for attribute DV Standards Body failed
26588	Error	Parameter	Video Parameter Check	Test for attribute DV Has Closed Caption (Standard) failed
26589	Error	Parameter	Audio Parameter Check	Test for attribute DV Audio Locked failed
26590	Error	Parameter	Video Parameter Check	Test for attribute DV Has Closed Caption (GVG Line 19) failed
26591	Error	Parameter	Container Parameter Check	Test for attribute MXF Footer Partition Present failed
26592	Error	Parameter	Video Parameter Check	Test for attribute Video Resolution failed
26593	Error	Parameter	Container Parameter Check	Test for attribute Mxf Clip Duration Comparison failed
26594	Error	Parameter	Container Parameter Check	Test for attribute Mxf Start TimeCode failed

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
26595	Error	Parameter	Video Parameter Check	Test for attribute Alpha Channel failed
26596	Error	Parameter	Video Parameter Check	Test for attribute Display Width failed
26597	Error	Parameter	Video Parameter Check	Test for attribute Display Height failed
27001	Error	Template rule	Audio Test Case	Audio silence missing
27002	Error	Template rule	Audio Test Case	Audio silence exceeds permitted length
27003	Error	Template rule	Audio Test Case	Audio peak level exceeds permitted maximum value
27004	Error	Template rule	Audio Test Case	Audio peak level does not reach required minimum value
27006	Error	Template rule	Audio Test Case	Maximum permitted number of audio clips exceeded
27007	Error	Template rule	Audio Test Case	Audio test tone missing
27008	Error	Template rule	Audio Test Case	Audio test tone exceeds permitted length
27009	Error	Template rule	Video Test Case	Black video sequence missing
27010	Error	Template rule	Video Test Case	Black video sequence exceeds permitted length
27011	Error	Template rule	Video Test Case	Block Artifacts exceed permitted number
27012	Error	Template rule	Video Test Case	Illegal signal component detected
27013	Error	Template rule	Video Test Case	Invalid signal component detected
27014	Error	Parameter	Container Parameter Check	Violation of Cable Labs VOD CEP specification
27015	Error	Template rule	Video Test Case	Bad placement of MPEG-2 GOP headers
27016	Error	Template rule	Video Test Case	An MPEG-2 GOP header should have been closed, but was not
27017	Error	Template rule	Audio Test Case	Audio mute missing
27018	Error	Template rule	Audio Test Case	Audio mute exceeds permitted length
27019	Error	Template rule	Video Test Case	Quantiser level exceeds permitted value

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27020	Error	Template rule	Video Test Case	Monochrome video sequence detected
27021	Error	Template rule	Video Test Case	Letterboxing error detected
27022	Error	Template rule	Video Test Case	Pillarboxing error detected
27023	Error	Template rule	Video Test Case	Luma limit violation detected
27024	Error	Template rule	Video Test Case	RGB component violation detected
27026	Error	Template rule	Container Parameter Check	Audio on unexpected PID
27027	Error	Template rule	Container Parameter Check	Video on unexpected PID
27028	Error	Template rule	Video Test Case	Freeze frame detected
27029	Error	Template rule	Video Test Case	Baseband field order error
27030	Error	Template rule	Video Test Case	Stream flag field order error
27031	Error	Template rule	Video Test Case	Field order mismatch
27032	Error	Template rule	Video Test Case	Drop frame violation
27033	Error	Template rule	Video Test Case	No field order flagged
27034	Error	Template rule	Video Test Case	Invalid field order flags
27035	Error	Template rule	Video Test Case	Line 19 closed captions
27036	Error	Template rule	Video Test Case	Line 19 closed captions data
27037	Error	Template rule	Audio Test Case	Audio Loudness exceeds permitted maximum limit
27038	Error	Template rule	Audio Test Case	Audio Loudness below permitted minimum limit
27039	Error	All audio	General audio	Audio PPM ballistic level exceeds permitted maximum value
27040	Error	All audio	General audio	Audio PPM ballistic level does not reach required minimum value
27041	Error	All video	General video	PSE red content detected
27042	Error	All video	General video	PSE flash content detected
27043	Error	All video	General video	PSE spatial content detected
27044	Error	All video	General video	PSE extended content detected
27045	Error	All video	General video	Photosensitive epilepsy library failure

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27046	Error	All video	General video	Photosensitive epilepsy library scan order difference
27047	Error	All video	General video	PSE license error
27501	Error	MPEG-1/2 audio	Audio Header	Incorrect syncword
27502	Error	MPEG-1/2 audio	Audio Header	Incorrect ID
27503	Error	MPEG-1/2 audio	Audio Header	Incorrect layer
27504	Error	MPEG-1/2 audio	Audio Header	Incorrect protection_bit
27505	Error	MPEG-1/2 audio	Audio Header	Incorrect bitrate_index
27506	Error	MPEG-1/2 audio	Audio Header	Incorrect sampling_frequency
27507	Error	MPEG-1/2 audio	Audio Header	Incorrect padding_bit
27508	Error	MPEG-1/2 audio	Audio Header	Incorrect private_bit
27509	Error	MPEG-1/2 audio	Audio Header	Incorrect mode
27510	Error	MPEG-1/2 audio	Audio Header	Incorrect mode_extension
27511	Error	MPEG-1/2 audio	Audio Header	Incorrect copyright
27512	Error	MPEG-1/2 audio	Audio Header	Incorrect original_copy
27513	Error	MPEG-1/2 audio	Audio Header	Incorrect emphasis
27514	Error	MPEG-1/2 audio	Audio Error Check	Incorrect crc_check
27515	Error	MPEG-1/2 audio	Audio Data	Incorrect allocation
27516	Error	MPEG-1/2 audio	Audio Data	Incorrect scalefactor
27517	Error	MPEG-1/2 audio	Audio Data	Incorrect sample
27518	Error	MPEG-1/2 audio	Audio Data	Incorrect scfsi
27519	Error	MPEG-1/2 audio	Audio Data	Incorrect samplecode
27520	Error	MPEG-1/2 audio	Audio Data	Incorrect main_data_begin
27521	Error	MPEG-1/2 audio	Audio Data	Incorrect private_bits
27522	Error	MPEG-1/2 audio	Audio Data	Incorrect part2_3_Length
27523	Error	MPEG-1/2 audio	Audio Data	Incorrect big_values
27524	Error	MPEG-1/2 audio	Audio Data	Incorrect global_gain
27525	Error	MPEG-1/2 audio	Audio Data	Incorrect scalefac_compress
27526	Error	MPEG-1/2 audio	Audio Data	Incorrect window_switching_flag
27527	Error	MPEG-1/2 audio	Audio Data	Incorrect block_type
27528	Error	MPEG-1/2 audio	Audio Data	Incorrect mixed_block_flag
27529	Error	MPEG-1/2 audio	Audio Data	Incorrect table_select
27530	Error	MPEG-1/2 audio	Audio Data	Incorrect subblock_gain
27531	Error	MPEG-1/2 audio	Audio Data	Incorrect region0_count
27532	Error	MPEG-1/2 audio	Audio Data	Incorrect regionl_count

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27533	Error	MPEG-1/2 audio	Audio Data	Incorrect preflag
27534	Error	MPEG-1/2 audio	Audio Data	Incorrect scalefac_scale
27535	Error	MPEG-1/2 audio	Audio Data	Incorrect countltable_select
27536	Error	MPEG-1/2 audio	Audio Main Data	Incorrect scalefac_l
27537	Error	MPEG-1/2 audio	Audio Main Data	Incorrect scalefac_s
27538	Error	MPEG-1/2 audio	Audio Huffman Code Bits	Incorrect hcod
27539	Error	MPEG-1/2 audio	Audio Huffman Code Bits	Incorrect linbitsx
27540	Error	MPEG-1/2 audio	Audio Huffman Code Bits	Incorrect signx
27541	Error	MPEG-1/2 audio	Audio Huffman Code Bits	Incorrect linbitsy
27542	Error	MPEG-1/2 audio	Audio Huffman Code Bits	Incorrect signy
27543	Error	MPEG-1/2 audio	Audio Huffman Code Bits	Incorrect signv
27544	Error	MPEG-1/2 audio	Audio Huffman Code Bits	Incorrect signw
27545	Error	MPEG-1/2 audio	Audio Ancillary Data	Incorrect ancillary_bit
27547	Error	MPEG-1/2 audio	Audio Header	ID is inconsistent between frames
27548	Error	MPEG-1/2 audio	Audio Header	Layer is inconsistent between frames
27549	Error	MPEG-1/2 audio	Audio Header	Protection bit is inconsistent between frames
27550	Error	MPEG-1/2 audio	Audio Header	Sample frequency is inconsistent between frames
27551	Error	MPEG-1/2 audio	Audio Header	Copyright bit is inconsistent between frames
27552	Error	MPEG-1/2 audio	Audio Header	Original/Copy bit is inconsistent between frames
27553	Error	MPEG-1/2 audio	Audio Header	Emphasis bit is inconsistent between frames
27751	Error	AAC audio	Adts Header	Incorrect Adts_Syncword
27752	Error	AAC audio	Adts Header	Incorrect Adts_ID
27753	Error	AAC audio	Adts Header	Incorrect Adts_Layer
27754	Error	AAC audio	Adts Header	Incorrect Adts_protection_absent
27755	Error	AAC audio	Adts Header	Incorrect Adts_Profile_ObjectType
27756	Error	AAC audio	Adts Header	Incorrect Adts_sampling_frequency_index

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27757	Error	AAC audio	Adts Header	Incorrect Adts_private_bit
27758	Error	AAC audio	Adts Header	Incorrect Adts_channel_configuration
27759	Error	AAC audio	Adts Header	Incorrect Adts_original_copy
27760	Error	AAC audio	Adts Header	Incorrect Adts_home
27761	Error	AAC audio	Adts Header	Incorrect Adts_copyright_identification_bit
27762	Error	AAC audio	Adts Header	Incorrect Adts_copyright_identification_start
27763	Error	AAC audio	Adts Header	Incorrect Adts_aac_frame_length
27764	Error	AAC audio	Adts Header	Incorrect Adts_adts_buffer_fullness
27765	Error	AAC audio	Adts Header	Incorrect Adts_no_raw_data_blocks_in_frame
27766	Error	AAC audio	Adts Error Check	Incorrect Adts_crc_check
27767	Error	AAC audio	Adts Error Check	Incorrect Adts_raw_data_block_position
27768	Error	AAC audio	Aac Decoder Config	Incorrect audioObjectType
27769	Error	AAC audio	Aac Decoder Config	Incorrect samplingFrequencyIndex
27770	Error	AAC audio	Aac Decoder Config	Incorrect samplingFrequency
27771	Error	AAC audio	Aac Decoder Config	Incorrect channelConfiguration
27772	Error	AAC audio	Aac Decoder Config	Incorrect extensionSamplingFrequencyIndex
27773	Error	AAC audio	Aac Decoder Config	Incorrect extensionSamplingFrequency
27774	Error	AAC audio	Aac Decoder Config	Incorrect epConfig
27775	Error	AAC audio	Aac Decoder Config	Incorrect directMapping
27776	Error	AAC audio	Aac Decoder Config	Incorrect syncExtensionType
27777	Error	AAC audio	Aac Decoder Config	Incorrect extensionAudioObjectType
27778	Error	AAC audio	Aac Decoder Config	Incorrect sbrPresentFlag
27779	Error	AAC audio	Aac Decoder Config	Incorrect frameLengthFlag
27780	Error	AAC audio	Aac Decoder Config	Incorrect dependsOnCoreCoder

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27781	Error	AAC audio	Aac Decoder Config	Incorrect coreCoderDelay
27782	Error	AAC audio	Aac Decoder Config	Incorrect extensionFlag
27783	Error	AAC audio	Aac Decoder Config	Incorrect layerNr
27784	Error	AAC audio	Aac Decoder Config	Incorrect numOfSubFrame
27785	Error	AAC audio	Aac Decoder Config	Incorrect layer_length
27786	Error	AAC audio	Aac Decoder Config	Incorrect aacSectionDataResilienceFlag
27787	Error	AAC audio	Aac Decoder Config	Incorrect aacScalefactorDataResilienceFlag
27788	Error	AAC audio	Aac Decoder Config	Incorrect aacSpectralDataResilienceFlag
27789	Error	AAC audio	Aac Decoder Config	Incorrect extensionFlag3
27790	Error	AAC audio	Aac Program Config	Incorrect element_instance_tag
27791	Error	AAC audio	Aac Program Config	Incorrect object_type
27792	Error	AAC audio	Aac Program Config	Incorrect sampling_frequency_index
27793	Error	AAC audio	Aac Program Config	Incorrect num_front_channel_elements
27794	Error	AAC audio	Aac Program Config	Incorrect num_side_channel_elements
27795	Error	AAC audio	Aac Program Config	Incorrect num_back_channel_elements
27796	Error	AAC audio	Aac Program Config	Incorrect num_lfe_channel_elements
27797	Error	AAC audio	Aac Program Config	Incorrect num_assoc_data_elements
27798	Error	AAC audio	Aac Program Config	Incorrect num_valid_cc_elements
27799	Error	AAC audio	Aac Program Config	Incorrect mono_mixdown_present
27800	Error	AAC audio	Aac Program Config	Incorrect mono_mixdown_element_number
27801	Error	AAC audio	Aac Program Config	Incorrect stereo_mixdown_present
27802	Error	AAC audio	Aac Program Config	Incorrect stereo_mixdown_element_number
27803	Error	AAC audio	Aac Program Config	Incorrect matrix_mixdown_idx_present
27804	Error	AAC audio	Aac Program Config	Incorrect matrix_mixdown_idx

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27805	Error	AAC audio	Aac Program Config	Incorrect pseudo_surround_enable
27806	Error	AAC audio	Aac Program Config	Incorrect front_element_is_cpe
27807	Error	AAC audio	Aac Program Config	Incorrect front_element_tag_select
27808	Error	AAC audio	Aac Program Config	Incorrect side_element_is_cpe
27809	Error	AAC audio	Aac Program Config	Incorrect side_element_tag_select
27810	Error	AAC audio	Aac Program Config	Incorrect back_element_is_cpe
27811	Error	AAC audio	Aac Program Config	Incorrect back_element_tag_select
27812	Error	AAC audio	Aac Program Config	Incorrect lfe_element_tag_select
27813	Error	AAC audio	Aac Program Config	Incorrect assoc_data_element_tag_select
27814	Error	AAC audio	Aac Program Config	Incorrect cc_element_is_ind_sw
27815	Error	AAC audio	Aac Program Config	Incorrect valid_cc_element_tag_select
27816	Error	AAC audio	Aac Program Config	Incorrect comment_field_bytes
27817	Error	AAC audio	Aac Program Config	Incorrect comment_field_data
27818	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect id_syn_ele
27819	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect common_window
27820	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect ms_mask_present
27821	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect ms_used
27822	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect ics_reserved_bit
27823	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect window_sequence
27824	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect window_shape
27825	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect max_sfb

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27826	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect scale_factor_grouping
27827	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect predictor_data_present
27828	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect predictor_reset
27829	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect predictor_reset_group_number
27830	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect prediction_used
27831	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect ltp_data_present
27832	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect number_pulse
27833	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect pulse_start_sfb
27834	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect pulse_offset
27835	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect pulse_amp
27836	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect ind_sw_cce_flag
27837	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect num_coupled_elements
27838	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect cc_target_is_cpe
27839	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect cc_target_tag_select
27840	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect cc_l
27841	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect cc_r
27842	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect cc_domain
27843	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect gain_element_sign
27844	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect gain_element_scale
27845	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect common_gain_element_present
27846	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect hcod_sf

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27847	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect data_byte_align_flag
27848	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect count
27849	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect esc_count
27850	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect data_stream_byte
27851	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect max_band
27852	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect alevcode
27853	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect aloccode
27854	Error	AAC audio	Aac Main Ssr Lc Ltp Payloads	Incorrect adjust_num
27855	Error	AAC audio	Aac Subsidiary Payloads	Incorrect global_gain
27856	Error	AAC audio	Aac Subsidiary Payloads	Incorrect pulse_data_present
27857	Error	AAC audio	Aac Subsidiary Payloads	Incorrect tns_data_present
27858	Error	AAC audio	Aac Subsidiary Payloads	Incorrect gain_control_data_present
27859	Error	AAC audio	Aac Subsidiary Payloads	Incorrect length_of_reordered_spectral_data
27860	Error	AAC audio	Aac Subsidiary Payloads	Incorrect length_of_longest_codeword
27861	Error	AAC audio	Aac Subsidiary Payloads	Incorrect sect_cb
27862	Error	AAC audio	Aac Subsidiary Payloads	Incorrect sect_len_incr
27863	Error	AAC audio	Aac Subsidiary Payloads	Incorrect dpcm_noise_nrg
27864	Error	AAC audio	Aac Subsidiary Payloads	Incorrect sf_concealment
27865	Error	AAC audio	Aac Subsidiary Payloads	Incorrect rev_global_gain
27866	Error	AAC audio	Aac Subsidiary Payloads	Incorrect length_of_rvlc_sf
27867	Error	AAC audio	Aac Subsidiary Payloads	Incorrect rvlc_cod_sf
27868	Error	AAC audio	Aac Subsidiary Payloads	Incorrect sf_escapes_present
27869	Error	AAC audio	Aac Subsidiary Payloads	Incorrect length_of_rvlc_escapes
27870	Error	AAC audio	Aac Subsidiary Payloads	Incorrect rvlc_esc_sf
27871	Error	AAC audio	Aac Subsidiary Payloads	Incorrect dpcm_noise_last_position

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27872	Error	AAC audio	Aac Subsidiary Payloads	Incorrect n_filt
27873	Error	AAC audio	Aac Subsidiary Payloads	Incorrect coef_res
27874	Error	AAC audio	Aac Subsidiary Payloads	Incorrect length
27875	Error	AAC audio	Aac Subsidiary Payloads	Incorrect order
27876	Error	AAC audio	Aac Subsidiary Payloads	Incorrect direction
27877	Error	AAC audio	Aac Subsidiary Payloads	Incorrect coef_compress
27878	Error	AAC audio	Aac Subsidiary Payloads	Incorrect coef
27879	Error	AAC audio	Aac Subsidiary Payloads	Incorrect ltp_lag_update
27880	Error	AAC audio	Aac Subsidiary Payloads	Incorrect ltp_lag
27881	Error	AAC audio	Aac Subsidiary Payloads	Incorrect ltp_coef
27882	Error	AAC audio	Aac Subsidiary Payloads	Incorrect ltp_long_used
27883	Error	AAC audio	Aac Subsidiary Payloads	Incorrect ltp_short_used
27884	Error	AAC audio	Aac Subsidiary Payloads	Incorrect ltp_short_lag_present
27885	Error	AAC audio	Aac Subsidiary Payloads	Incorrect ltp_short_lag
27886	Error	AAC audio	Aac Subsidiary Payloads	Incorrect hcod
27887	Error	AAC audio	Aac Subsidiary Payloads	Incorrect quad_sign_bits
27888	Error	AAC audio	Aac Subsidiary Payloads	Incorrect pair_sign_bits
27889	Error	AAC audio	Aac Subsidiary Payloads	Incorrect hcod_esc_y
27890	Error	AAC audio	Aac Subsidiary Payloads	Incorrect hcod_esc_z
27891	Error	AAC audio	Aac Subsidiary Payloads	Incorrect extension_type
27892	Error	AAC audio	Aac Subsidiary Payloads	Incorrect fill_nibble
27893	Error	AAC audio	Aac Subsidiary Payloads	Incorrect fill_byte
27894	Error	AAC audio	Aac Subsidiary Payloads	Incorrect other_bits
27895	Error	AAC audio	Aac Subsidiary Payloads	Incorrect pce_tag_present
27896	Error	AAC audio	Aac Subsidiary Payloads	Incorrect pce_instance_tag
27897	Error	AAC audio	Aac Subsidiary Payloads	Incorrect drc_tag_reserved_bits
27898	Error	AAC audio	Aac Subsidiary Payloads	Incorrect excluded_chns_present
27899	Error	AAC audio	Aac Subsidiary Payloads	Incorrect drc_bands_present
27900	Error	AAC audio	Aac Subsidiary Payloads	Incorrect drc_band_incr
27901	Error	AAC audio	Aac Subsidiary Payloads	Incorrect drc_bands_reserved_bits
27902	Error	AAC audio	Aac Subsidiary Payloads	Incorrect drc_band_top
27903	Error	AAC audio	Aac Subsidiary Payloads	Incorrect prog_ref_level_present

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27904	Error	AAC audio	Aac Subsidiary Payloads	Incorrect prog_ref_level
27905	Error	AAC audio	Aac Subsidiary Payloads	Incorrect prog_ref_level_reserved_bits
27906	Error	AAC audio	Aac Subsidiary Payloads	Incorrect dyn_rng_sgn
27907	Error	AAC audio	Aac Subsidiary Payloads	Incorrect dyn_rng_ctl
27908	Error	AAC audio	Aac Subsidiary Payloads	Incorrect reordered_spectral_data
27909	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_sbr_crc_bits
27910	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_header_flag
27911	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_fill_bits
27912	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_amp_res
27913	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_start_freq
27914	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_stop_freq
27915	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_xover_band
27916	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_reserved
27917	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_header_extra_1
27918	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_header_extra_2
27919	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_freq_scale
27920	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_alter_scale
27921	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_noise_bands
27922	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_limiter_bands
27923	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_limiter_gains
27924	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_interpol_freq
27925	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_smoothing_mode
27926	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_data_extra
27927	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_add_harmonic_flag
27928	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_extended_data
27929	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_extension_size
27930	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_esc_count
27931	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_extension_id
27932	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_coupling
27933	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_frame_class
27934	Error	AAC audio	Aac Sbr Payloads	Incorrect tmp

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27935	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_freq_res
27936	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_pointer
27937	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_var_bord_0
27938	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_var_bord_1
27939	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_num_rel_0
27940	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_num_rel_1
27941	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_df_env
27942	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_df_noise
27943	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_invf_mode
27944	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_env_start_value_balance
27945	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_env_start_value_level
27946	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_codeword
27947	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_noise_start_value_balance
27948	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_noise_start_value_level
27949	Error	AAC audio	Aac Sbr Payloads	Incorrect bs_add_harmonic
27950	Error	AAC audio	Aac Sbr Payloads	Incorrect unused_sbr_data
27951	Error	AAC audio	Aac Program Config	Incorrect alignment_bits
27953	Error	AAC audio	Aac Subsidiary Payloads	Error processing pulse data
27954	Error	AAC audio	Aac Subsidiary Payloads	Number of scalefactor bands is greater than max scalefactor bands
27955	Error	AAC audio	Aac Subsidiary Payloads	Number of scalefactor bands is not equal to total scalefactor bands
27956	Error	AAC audio	Aac Subsidiary Payloads	Number of sections is greater than total scalefactor bands
27957	Error	AAC audio	Aac Subsidiary Payloads	Huffman codebook is not equal to number of groups
27958	Error	AAC audio	Aac Subsidiary Payloads	Huffman codeword is longer than specified length of longest codeword
27959	Error	AAC audio	Aac Subsidiary Payloads	Invalid huffman codebook specified

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
27960	Error	AAC audio	Aac Subsidiary Payloads	Number of sections is zero but max scalefactor bands is non zero
27961	Error	AAC audio	Aac Subsidiary Payloads	Cannot set pulse_data_present for short blocks
27962	Error	AAC audio	Aac Subsidiary Payloads	Scalefactor too large
27963	Error	AAC audio	Aac Subsidiary Payloads	Scalefactor too small
27964	Error	AAC audio	Aac Subsidiary Payloads	Max scalefactor band is greater than scale factor bands per subblock
27965	Error	AAC audio	Aac Sequence	Prediction is not allowed in this profile
27966	Error	AAC audio	Aac Sequence	length_of_re-ordered_spectral_data is too long
27967	Error	AAC audio	Aac Sequence	Specified channel not supported by this decoder
27968	Error	AAC audio	Audio Test Case	Profile constraint not met
28250	Error	MXF	MXF Container layer	MXF Container Error
28251	Error	MXF	MXF Container layer	Library Initialisation Failure
28252	Error	MXF	MXF Container layer	Audio will not be decoded
28253	Error	MXF	MXF Container layer	Incomplete edit unit
28569	Error	DV video	Header	Invalid header section type
28570	Error	DV video	Header	Invalid DIF block sequence number
28571	Error	DV video	Header	Invalid header DIF block number
28572	Error	DV video	Subcode	Invalid Subcode DIF block number
28573	Error	DV video	VAUX	Invalid VAUX DIF block number
28574	Error	DV video	Video Data	Invalid Video Data DIF block number
28575	Error	DV video	Header	Invalid DSF flag
28576	Error	DV video	Header	Invalid zero bit
28577	Error	DV video	Header	Invalid track application ID
28578	Error	DV video	Subcode	Invalid Subcode section type
28579	Error	DV video	Subcode	Invalid Subcode sync block number

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
28580	Error	DV video	Subcode	Invalid TimeCode pack code word
28581	Error	DV video	Subcode	Invalid BinaryGroup pack code word
28582	Error	DV video	VAUX	Invalid VAUX section type
28583	Error	DV video	VAUX	Invalid VAUX source pack identifier code
28584	Error	DV video	VAUX	Invalid field system
28585	Error	DV video	VAUX	Invalid colour format
28586	Error	DV video	VAUX	Invalid VAUX source control pack identifier code
28587	Error	DV video	VAUX	Invalid channel
28588	Error	DV video	Video Data	Invalid section type for video
28589	Error	DV video	Video Data	Invalid code for macro block status
28590	Error	DV video	VAUX	Invalid colour frames identification code
28591	Error	DV video	VAUX	Invalid copy generation management system
28592	Error	DV video	VAUX	Invalid display select mode
28593	Error	DV video	VAUX	Invalid input source for just previous recording
28594	Error	DV video	VAUX	Invalid broadcast system
28595	Error	DV video	VAUX	Invalid VISC
28596	Error	DV video	Subcode	Invalid Absolute Track Number
28597	Error	DV video	Subcode	Invalid Channel Half
28598	Error	DV video	Subcode	Invalid TAG ID
28599	Error	DV video	Subcode	Invalid Time Code Pack
28600	Error	DV video	Subcode	Invalid Binary Group Pack
28601	Error	DV video	Frame	Invalid Subcode Pack
28602	Error	DV video	Video Data	Missing EOB marker in coefficient bitstream
28603	Error	DV video	Video Data	Corrupt ac coefficient bitstream
28750	Error	GXF	GXF Container layer	GXF Container Error
28751	Error	GXF	GXF Container layer	GXF Packet Error
31001	Warning	All	General	Unclassified warning
31002	Warning	All	General	Delayed start code

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
31003	Warning	All	General	Long delay until next frame display
31004	Warning	All	General	Audio-Video delay exceeds threshold
31005	Warning	All	General	Unmatched Audio-Video event
31006	Warning	All	General	Unique alert limit reached
31007	Warning	Parameter	Audio Parameter Check	Bad parameters in Audio Template
31008	Warning	Parameter	Video Parameter Check	Bad parameters in Video Template
31009	Warning	Parameter	Container Parameter Check	Bad parameters in Container Template
31010	Warning	All	General	Maximum number of alerts exceeded
31011	Warning	All	General	End of stream tests could not be run
31012	Warning	Parameter	General	Bad Template parameters
31013	Warning	All audio	General audio	Duplicate channel in channel configuration
31501	Warning	H.263 video	Picture Layer	Two consecutive temporal refs are zero
31751	Warning	H.263 video	Picture Layer	PSUPP being sent
31752	Warning	H.263 video	Picture Layer	Pspare being sent (ignored)
31753	Warning	H.263 video	Picture Layer	Forbidden codeword
32000	Warning	MPEG-2 video	Video Sequence	Unknown extension_start_code_identifier
32003	Warning	MPEG-2 video	General	Invalid marker_bit
32004	Warning	MPEG-2 video	General	Invalid zero_bit
32005	Warning	MPEG-2 video	General	Invalid zero_byte
32044	Warning	MPEG-2 video	Picture	Invalid copyright_reserved_bits
32058	Warning	MPEG-2 video	Slice	Invalid extra_bit_slice
32068	Warning	MPEG-2 video	Video Sequence	Invalid aspect_ratio_information
32072	Warning	MPEG-2 video	Video Sequence	Invalid constrained_parameters_flag
32092	Warning	MPEG-2 video	Video Sequence	Invalid time_code_hours
32093	Warning	MPEG-2 video	Video Sequence	Invalid time_code_minutes

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
32094	Warning	MPEG-2 video	Video Sequence	Invalid time_code_seconds
32095	Warning	MPEG-2 video	Video Sequence	Invalid time_code_pictures
32114	Warning	MPEG-2 video	Picture	Invalid camera_params_reserved1
32115	Warning	MPEG-2 video	Picture	Invalid camera_params_reserved2
32120	Warning	MPEG-2 video	Picture	Invalid vertical_angle_of_view
32144	Warning	MPEG-2 video	Picture	Invalid counting_type
32195	Warning	MPEG-2 video	Picture	Invalid data_type
32196	Warning	MPEG-2 video	Video Sequence	Incorrect frame rate fraction
32197	Warning	MPEG-2 video	Picture	Incorrect vbv_delay
32198	Warning	MPEG-2 video	Video Object Plane	VBV overflow
32199	Warning	MPEG-2 video	Video Object Plane	VBV underflow
32200	Warning	MPEG-2 video	Video Sequence	Data present after end of video sequence
32201	Warning	MPEG-2 video	Video Sequence	Concatenated sequence
32202	Warning	MPEG-2 video	Video Sequence	Profile/level not supported
33001	Warning	MPEG-4 video	Video Object Plane	modulo_time_base is zero
33002	Warning	MPEG-4 video	Video Object Plane	Incorrect stuffing bits
33003	Warning	MPEG-4 video	General	Maximum frame rate exceeded for SP / Level 0
33004	Warning	MPEG-4 video	Video Object Plane	vop_time_increment has changed while resynchronising
33005	Warning	MPEG-4 video	Video Object Plane	intra_dc_vlc_thr is not 0
33006	Warning	MPEG-4 video	Video Object Plane	vop_fcode_forward is > 1 in SP Level 0
33007	Warning	MPEG-4 video	Video Object Plane	vop_fcode_backward is > 1 in SP Level 0
33008	Warning	MPEG-4 video	General	Invalid entry point
33009	Warning	MPEG-4 video	Visual Object Sequence	Missing visual_object_sequence_end_code
33010	Warning	MPEG-4 video	Video Object Plane	dquant read after ac_pred_flag=1
33011	Warning	MPEG-4 video	Video Object Plane	Header mismatch
33012	Warning	MPEG-4 video	Video Object Layer	vop_time_increment is repeated
33013	Warning	MPEG-4 video	Video Object Plane	VBV overflow

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
33014	Warning	MPEG-4 video	Video Object Plane	VBV underflow
33015	Warning	MPEG-4 video	Video Object Plane	VCV overflow
33016	Warning	MPEG-4 video	Video Object Plane	VMV overflow
33017	Warning	MPEG-4 video	Group of VOPs	Display time overlap
33018	Warning	MPEG-4 video	Video Object Layer	sprite_brightness_change is non-zero with GMC
33251	Warning	MPEG-4 container	MPEG-4 Container layer	Incompatible sample descriptions
34269	Warning	H.264/AVC video	RBSP.Slice layer.Slice data	Intra prediction mode not allowed
34270	Warning	H.264/AVC video	RBSP.Slice layer.Slice data	Illegal Intra prediction mode
34272	Warning	H.264/AVC video	NAL unit	Forbidden bit set
34273	Warning	H.264/AVC video	NAL unit	Incorrect zero_byte
34274	Warning	H.264/AVC video	NAL unit	Incorrect start_code_prefix_one_3bytes
34275	Warning	H.264/AVC video	NAL unit	Undefined NALU
34277	Warning	H.264/AVC video	RBSP	Mismatch in long_term_frame_idx
34278	Warning	H.264/AVC video	RBSP.SEI	Incorrect filler payload bytes
34280	Warning	H.264/AVC video	RBSP	Zero Pred Blocks in edge distortion calculation
34281	Warning	H.264/AVC video	RBSP.Slice layer	Macroblock out of range
34282	Warning	H.264/AVC video	RBSP.Slice layer	Incorrect field_pic_flag
34283	Warning	H.264/AVC video	RBSP	Outputting frame as unpaired field
34284	Warning	H.264/AVC video	RBSP	Incorrect reserved bits
34285	Warning	H.264/AVC video	NAL unit	Incorrect trailing bits
34287	Warning	H.264/AVC video	RBSP	Incorrect seq_parameter_set_id
34288	Warning	H.264/AVC video	RBSP	Incorrect log2_max_frame_num_minus4
34289	Warning	H.264/AVC video	RBSP	Incorrect log2_max_pic_order_cnt_lsb_minus4
34290	Warning	H.264/AVC video	RBSP	Incorrect offset_for_non_ref_pic
34291	Warning	H.264/AVC video	Video Object Plane	HRD overflow
34292	Warning	H.264/AVC video	Video Object Plane	HRD underflow

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
34293	Warning	H.264/AVC video	Video Object Plane	Failed HRD conformance check
34294	Warning	H.264/AVC video	RBSP.Slice layer.Slice data	Aborting slice decode
34295	Warning	H.264/AVC video	RBSP.Slice layer	Expected start of new picture.
34296	Warning	H.264/AVC video	NAL unit	Incorrect leading_zero_8bit
34297	Warning	H.264/AVC video	General	HRD information missing
34298	Warning	H.264/AVC video	RBSP.SPS	SPS changed in new Coded Video Sequence
34299	Warning	H.264/AVC video	NAL unit	Slice type prohibited by Access Unit Delimiter NALU
35250	Warning	Dolby-E	Dolby-E Frame	Mid-stream Dolby-E configuration change
36158	Warning	VC-1 video	Picture Layer	Invalid intra8_flag
36364	Warning	VC-1 video	Sequence Layer	Pre-RC1 interlaced stream
36501	Warning	Parameter	General	Test not run during Quick Check
37001	Warning	Template rule	General	Test not supported
37002	Warning	Template rule	General	Decoded data unavailable for test case
37003	Warning	All audio	General audio	Audio loudness below -120 LKFS/LUFS, possible silence
37953	Warning	AAC audio	Aac Sequence	Reached end of audio frame
38002	Warning	Dolby Digital audio	Synchronization Information	Sample rate change
38250	Warning	MXF	MXF Container layer	MXF Container Warning
38569	Warning	DV video	Frame	Invalid Reserved Bit
38570	Warning	DV video	Frame	Invalid sequence number
38571	Warning	DV video	Frame	Invalid No Information Byte
38572	Warning	DV video	VAUX	Invalid Reserved Tuner Category
38573	Warning	DV video	Frame	Invalid No Information Pack
38574	Warning	DV video	Frame	Invalid No Reserved Pack
38575	Warning	DV video	Header	No video present in stream
38576	Warning	DV video	Unknown	Invalid AAUX PC0 Header field
38577	Warning	DV video	Unknown	Invalid AAUX LF field

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
38578	Warning	DV video	Unknown	Invalid AAUX AFSIZE field
38579	Warning	DV video	Unknown	Invalid AAUX CHN field
38580	Warning	DV video	Unknown	Invalid AAUX AUDIOMODE field
38581	Warning	DV video	Unknown	Invalid AAUX STYPE field
38582	Warning	DV video	Unknown	Invalid AAUX SMP field
38583	Warning	DV video	Unknown	Invalid AAUX QU field
38584	Warning	DV video	Unknown	Invalid AAUX 5060 field
38585	Warning	DV video	Unknown	Invalid AAUX Reserved field
41001	Info	All	General	Unclassified info
41002	Info	All	General	Alert suppressed
42196	Info	MPEG-2 video	Video Sequence	Simple profile not supported
42251	Info	MPEG-2 transport stream	MPEG-2 Transport Stream	Unsupported buffering model
43001	Info	MPEG-4 video	Visual Object Sequence	Header is repeated
44269	Info	H.264/AVC video	RBSP.SPS	DPB size undetermined
44270	Info	H.264/AVC video	RBSP.SPS	Unsupported profile
47001	Info	Template rule	Video Test Case	Video type summary
48250	Info	MXF	MXF Container layer	MXF Container Information
71000	Error	MPEG-2 video	Closed Caption	CEA 608 Closed Caption File error
71001	Error	MPEG-2 video	Closed Caption	CEA 608 Closed Caption Data with Invalid byte
71002	Error	MPEG-2 video	Closed Caption	CEA 608 Closed Caption Data with Invalid XDS command
71003	Error	MPEG-2 video	Closed Caption	CEA 608 Closed Caption Data with Invalid XDS code
71004	Error	MPEG-2 video	Closed Caption	SCTE20 Closed Caption with forbidden field number
71005	Error	MPEG-2 video	Closed Caption	CEA 708 with unsupported character
71006	Error	MPEG-2 video	Closed Caption	CEA 608 CC data on invalid field
71007	Error	MPEG-2 video	Closed Caption	Invalid character in 608 CC
71008	Error	MPEG-2 video	Closed Caption	SCTE21 Closed Caption with forbidden field number
71009	Error	MPEG-2 video	Closed Caption	Illegal Midrow Code

Table 7: Alerts (cont.)

Alert ID	Severity	Class	Context	Title
71010	Error	MPEG-2 video	Closed Caption	Number of rows exceeds the maximum
71011	Error	MPEG-2 video	Closed Caption	Maximum number of columns (=32)
71012	Error	MPEG-2 video	Closed Caption	Illegal PAC attribute
71013	Error	MPEG-2 video	Closed Caption	Inappropriate base row number
71014	Error	MPEG-2 video	Closed Caption	Invalid Set Pen Attribute command
71015	Error	MPEG-2 video	Closed Caption	Window not defined but is being set
71016	Error	MPEG-2 video	Closed Caption	Window not defined but being displayed
71017	Error	MPEG-2 video	Closed Caption	Window not defined but is being hidden
71018	Error	MPEG-2 video	Closed Caption	Window not defined but is being toggled
71019	Error	MPEG-2 video	Closed Caption	Window not defined but made inactive

Appendix B: Supported Compression Standards

This chapter provides details about the compression standards and file formats recognized by the system.

⚠ **CAUTION.** *The system processes at most one video stream and at most one audio stream from any one container file. If, for example, more than one audio stream is present in a container file, the system will process the audio stream that best matches any Audio Template (see page 89) set up for that stream by the user.*

Supported Video Compression Standards

Raw, uncompressed video formats are not supported.

Video standard	Description
H.264/AVC	
Standard	ITU-T Recommendation H.264 Advanced video coding for generic audiovisual services.
Aliases	H.264, AVC, MPEG-4 part 10
Supported revisions	ITU-T Rec. H.264 | ISO/IEC 14496-10 version 7 SMPTE RP 2027-2007 AVC Intra-Frame Coding Specification for SSM Card Applications
Supported features	Baseline Profile- all levels from 1 to 5.1 inclusive Extended Profile - all levels from 1 to 5.1 inclusive Main Profile - all levels from 1 to 5.1 inclusive High Profile - all levels from 1 to 5.1 inclusive High/10-bit - all levels from 1 to 5.1 inclusive High/4:2:2 - all levels from 1 to 5.1 inclusive High 4:4:4 Predictive Profile - all Levels from 1 to 5.1 inclusive High 10 Intra Profile - all Levels from 1 to 5.1 inclusive High 4:2:2 Intra Profile - all Levels from 1 to 5.1 inclusive High 4:4:4 Intra Profile- all Levels from 1 to 5.1 inclusive CAVLC 4:4:4 Intra Profile - all Levels from 1 to 5.1 inclusive
Constraints	Maximum 396 slices per picture Type I HRD conformance tests not supported HRD DPB verification not supported I_PCM support not fully implemented Video data greater than 8 bits is decoded to 8 bits for execution of quality checks.

Video standard	Description
VC-1	
Standard	SMPTE 421M VC-1 Compressed Video Bitstream Format and Decoding Process
Aliases	VC-1, VC9, Microsoft WM9
Supported revisions	Final Committee Draft I, Revision 4 2005-06-02
Supported features	All Profiles and levels are supported; simple Profile; Low and Medium level Main Profile; low, medium and high level Advanced Profile; L0, L1, L2, L3, L4
Constraints	HRD verification is not supported Multiresolution coding is not supported
MPEG-4 Part 2	
Standard	ISO/IEC 14496-2 Information technology - Coding of audio-visual objects - Part 2: Visual
Aliases	MPEG-4 part 2
Supported revisions	Third edition 2004-06-01 Amendment 1 2002 Amendment 2 2002 Corrigendum 1 2004
Supported features	Simple Profile; Level 0, Level 1, Level 2, Level 3 Advanced simple Profile; Level 0, Level 1, Level 2, Level 3,Level 3b, Level 4, Level 5 Main Profile; Level 2, Level 3
Constraints	The following main Profile tools are not supported: P-VOP based temporal scalability, Binary shape, Gray shape, Sprites. Complexity estimation headers are decoded but not analyzed.
Comments	MPEG-4 Part 2 Level 0 is an addition to simple Profile, which is not in the MPEG-4 standard reference. Level 0 is targeted at mobile systems; for example with a maximum picture size of QCIF and maximum frame rate of 15 frames per second.
MPEG-2 Part 2	
Standard	ISO/IEC 13818-2 Information technology - Generic coding of moving pictures and associated audio information: Video.
Aliases	MPEG-2 part 2, H.262
Supported revisions	Second edition 2000-12-15 ISO/IEC 13818-2:2000 Technical Corrigendum 1
Supported features	Main Profile; main level, high level, high level 1440 422 Profile: main level, high level
Constraints	Backward compatibility with MPEG-1 is not fully supported, but MPEG-1 streams that can be successfully decoded as MPEG-2 streams can be processed.

Video standard	Description
H.263	
Standard	ITU-T Recommendation H.263 Video Coding for Low Bit Rate Communication
Aliases	H.263
Supported revisions	02/98
Supported features	H.263 Baseline Standard:
Constraints	4CIF resolution is not supported.
Comments	Limited test coverage
DV	
Standard	IEC 61834 parts 1, 2 and 4 - Helical-scan digital video cassette recording system using 6,35mm magnetic tape for consumer use SMPTE 314M - Data Structure for DV-Based Audio, Data and Compressed Video 25 and 50 Mb/s. SMPTE 370M - Data Structure for DV-Based Audio, Data and Compressed Video at 100 Mb/s 1080/60i, 1080/50i, 720/60p, 720/50p.
Aliases	DV, DV25, DVCPRO, DVCAM DV50, DVCPRO50 DV100, DVCPRO100, DVCPRO HD
Supported revisions	1998 (IEC), 1999 (SMPTE-314M), 2006 (SMPTE-370M))
Supported features	DV 25Mb/s 4:1:1 525/60 DV 25Mb/s 4:1:1 625/50 DV 25Mb/s 4:2:0 625/50 DV 50Mb/s 4:2:2 525/60 DV 50Mb/s 4:2:2 625/50 DV 100Mb/s 4:2:2 1080/60i DV 100Mb/s 4:2:2 1080/50i DV 100Mb/s 4:2:2 720/60p DV 100Mb/s 4:2:2 720/50p
Constraints	IEC 61834-3 resolutions 1250/50 and 1125/60 not supported. The following syntax elements are not checked: DFTIA, SOFT ID, REMAIN TIME, TIME CODE, TEXT, CHAPTER START, REMAIN TIME HD resolutions are described as 1920x1080 and 1280x720 by the standards but DVCPRO HD is defined to resample this to 1440x1080 (1080i50) or 1280x1080 (1080i60) or 960x720 (720p) before encoding the image. It is this lower resolution which is reported.
Apple ProRes	
Standard	Apple Computer Inc. ProRes family
Aliases	ProRes 422
Supported revisions	2007, 2009

Video standard	Description
Supported features	Apple Prores 422 Apple Prores 422 (HQ) Apple Prores 422 (LT) Apple Prores 422 (Proxy) Apple Prores 4444
Constraints	Syntax elements are not checked. Video data greater than 8 bits is decoded to 8 bits for executing quality checks. In the signal range tests, the high and low limits specified for 8-bit digital should lie in the range 0 to 255. Apple QuickTime Player must be installed to decode this format.
Generic QuickTime Video	
Standard	N/A
Aliases	N/A
Supported revisions	N/A
Supported features	Any video format that QuickTime Player is capable of decoding.
Constraints	The video must be carried in a MOV, MP4, or 3GPP container. Video syntax elements are not checked. Video data greater than 8 bits is decoded to 8 bits for execution of quality checks. In the signal range tests, the high and low limits specified for 8 bits digital should lie in the range 0 to 255. Apple QuickTime Player must be installed.
JPEG 2000 Video	
Standard	The JPEG 2000 image coding system (ISO/IEC 15444)
Aliases	JPEG 2000, J2K
Supported revisions	As per Quicktime Player
Supported features	Features supported by Quick Time Player
Constraints	The video must be carried in a MOV, MP4, or 3GPP container. Video syntax elements are not checked. Video data greater than 8 bits is decoded to 8 bits for execution of quality checks. In the signal range tests, the high and low limits specified for 8 bits digital should lie in the range 0 to 255. Apple QuickTime Player must be installed.

Supported Audio Compression Standards

Audio standard	Description
Uncompressed audio	
Supported features	RIFF (also known as wave or .wav) AIFF 8-Channel AES3 as per SMPTE 331M (MXF only) AES3 (MXF only) Broadcast Wave Format (MXF only) Pinnacle PCM (MPEG-2 Program Stream only) GXF PCM DVD LPCM (DVD specification for LPCM in MPEG-2 Program Stream)
MPEG-1 part 3	
Standard	MPEG-1 audio: ISO/IEC 11172–3: 1993
Aliases	MPEG-1
Supported features	Layer I, Layer II
Constraints	Layer III (alias MP3) not supported
MPEG-2 part 3	
Standard	MPEG-2 audio: ISO/IEC 13818-3: First edition
Aliases	MPEG-2
Supported features	Layer I, Layer II
Constraints	Layer III (alias MP3) not supported
MPEG-2 part 7 AAC	
Standard	MPEG-2 ISO/IEC 13818–7: 2004
Aliases	AAC
Supported features	Main Profile Low complexity (LC) Profile
Constraints	Scalable Sampling Rate Profile (SSR) not supported
MPEG-4 part 3	
Standard	MPEG-4 ISO/IEC 14496–3: 2001
Aliases	AAC Plus, HE-AAC
Supported objects	Null AAC Main AAC LC (low complexity) AAC LTP (long term prediction) SBR (spectral band replication)
Supported Profiles	AAC High Efficiency AAC
Constraints	No other objects are supported other than those listed above No other profiles are supported other than those listed above

Audio standard	Description
Comments	MPEG-4 part 3 is backward-compatible with MPEG-2 part 7. aacPlus refers to enhancements developed by Coding Technologies. aacPlus V1 is standardized as the high efficiency Profile of MPEG-4 part 3 (HE AAC).
Dolby Digital	
Standard	Digital Audio Compression Standard (AC-3, E-AC-3) Revision B, Document A/52B: 2005
Aliases	Dolby Digital, AC-3
Supported objects	Baseline standard Annex D: Extended/alternate bit stream syntax
Constraints	Midstream sample rate change not supported. Pro-logic not supported. Dolby-Digital syntax elements are not checked.
DV Audio	
Standard	IEC 61834 parts 1, 2 and 4 - Helical-scan digital video cassette recording system using 6,35mm magnetic tape for consumer use SMPTE 314M - Data Structure for DV-Based Audio, Data and Compressed Video 25 and 50 Mb/s SMPTE 370M - Data Structure for DV-Based Audio, Data and Compressed Video at 100 Mb/s 1080/60i, 1080/50i, 720/60p, 720/50p.
Aliases	DV, DV25, DVCPRO, DVCAM DV50, DVCPRO50 DV100, DVCPRO100, DVCPRO HD
Supported revisions	1998 (IEC), 1999 (SMPTE-314M), 2006 (SMPTE-370M)
Supported features	48000, 44100, or 32000 sample rates 2, 4, or 8 channels 12 and 16 bit sample depth Locked and unlocked
Constraints	IEC DV25 4-channel audio is not supported. (4 channels are supported in DVCPRO50) DVCPRO HD 720p audio is not supported - but DVCPRO HD 1080i audio is supported. DV Audio syntax elements are not checked.
Window Media Audio Standard	
Standard	Microsoft - Windows Media Audio (Standard)
Aliases	WMA, WMA Standard
Supported features	VBR CBR All sub-syntax versions (1 and 2) All profile level versions (1, 2 and 3)

Audio standard	Description
Constraints	WMA Pro is not supported WMA Voice is not supported WMA Lossless is not supported WMA syntax elements are not checked
Dolby-E	
Standard	Dolby-E http://www.dolby.com/professional/pro_audio_engineering/ solutions_dolbye.html
Constraints	Support is limited to CRC checking and high-level attribute tests (program configuration, bit depth, duration and frame rate). Audio thumbnails and Audio Quality Checks (see page 91) are not supported for Dolby-E.

File Types and Container Formats

Supported file types and container formats include:

Format	Description
Microsoft ASF	
Standard	Advanced Systems Format (ASF) Specification, Microsoft Corporation, December, 2004.
Aliases	WMV, Windows Media, WM9
Constraints	Does not support external references
MP4 files	
Standard	MP4: ISO/IEC 14996–14: 2003
Supported atoms	avc1, avcC, co64, ctts, dinf, dref, esds, ftyp, hdlr, mdat, mdhd, mdia, minf, moov, mp4a, mp4v, smhd, stbl, stco, stsc, stsd, stsz, stts, tkhd, trak, url, urn, vmhd, skip
3GPP	
Standard	3GPP TS 26.244 3GPP file format: Release 6
Supported atoms	avc1, avcC, co64, ctts, dinf, dref, esds, ftyp, hdlr, mdat, mdhd, mdia, minf, moov, mp4a, mp4v, smhd, stbl, stco, stsc, stsd, stsz, stts, tkhd, trak, url, urn, vmhd, skip, s263, d263, bitr
GXF	
Standard	SMPTE 360M-2004 General Exchange Format
Constraints	Only MPEG-2 video and PCM audio supported
MXF	
Standard	SMPTE 377M-2004 Material Exchange Format
Supported code reference	OpenCube MXFTk v. 2.2.1
Constraints	Limited to OP1a, OP1b, OPAtom1A and OPAtom1B operational patterns
QuickTime	
Standard	QuickTime File Format (Apple Computer Inc.), 2001
Aliases	QuickTime, QT, Omneon QT, Mov

Format	Description
Supported atoms	avc1, avcC, co64, ctts, dinf, dref, esds, ftyp, hdlr, mdat, mdhd, mdia, minf, moov, mp4a, mp4v, smhd, stbl, stco, stsc, stsd, stsz, stts, tkhd, trak, url , urn , vmhd, skip, mpeg, dvcp, dvpp, dvc , dv5n, dv5p ni24, sowt, in24, twos, in32, ni32, mp4a, alis
MPEG-2 Systems	
Standard	MPEG-2: ISO/IEC 13818–1: 2001
Aliases	MPEG-2 TS, MPEG-2 PS, MPEG-2 PES
Supported features	Supported TS packet sizes: 188, 192, 204, 208
Constraints	Intended to operate on single program transports streams only Additional layers or extensions specified in regional industry standards are not supported (such as ARIB, ATSC, and DVB) PAT split between multiple packets not supported Buffer analysis not supported
Standard	MPEG-4 ISO/IEC 14496–3: 2001
Comments	Limited syntax verification

Supported Wrapper and Codec Combinations

The table below defines the combinations of codecs and containers that are supported. A √ at the intersection shows that the codec (row) is supported in the container (column), while an × indicates that this combination is not supported. The ES container format column indicates which codecs can be processed as a simple elementary stream with no associated wrapper layer.

Table 8: Supported wrapper and codec combinations

		Container Format									
Type	Elementary stream format	ES	ASF	MP4	3GPP	QuickTime	MPEG-2 PES	MPEG-2 PS	MPEG-2 TS	MXF	GXF
Video	H.263	√	×	√	√	√	×	×	×	×	×
Video	MPEG-2 part 2	√	×	×	×	√	√	√	√	√	√
Video	MPEG-4 part 2	√	×	√	√	√	×	×	×	×	×
Video	H.264/AVC	√	×	√	√	√	√	√	√	√	×
Video	DV	√	×	×	×	√	×	×	×	√	√
Video	VC-1	√	√	×	×	×	×	×	×	×	×
Video	ProRes	×	×	×	×	√	×	×	×	×	×
Video	Generic QuickTime	×	×	√	√	√	×	×	×	×	×
Audio	MPEG-1 part 3	×	×	×	×	×	√	√	√	√	×

Table 8: Supported wrapper and codec combinations (cont.)

Type	Elementary stream format	Container Format									
		ES	ASF	MP4	3GP-P	Quick-Time	MPEG-2 PES	MPEG-2 PS	MPEG-2 TS	MXF	GXF
Audio	MPEG-2 part 3	×	×	×	×	×	√	√	√	√	×
Audio	MPEG-2 part 7	×	×	√	√	√	√	√	√	×	×
Audio	MPEG-4 part 3	×	×	√	√	√	√	√	√	×	×
Audio	Dolby Digital	×	×	×	×	×	√	√	√	×	×
Audio	Dolby-E	×	×	×	×	√	×	×	×	√	√
Audio	PCM	×	×	×	×	√	√	√	√	√	√
Audio	WMA Standard	×	√	×	×	×	×	×	×	×	×
Audio	DV Audio	√	×	×	×	×	×	×	×	×	×

Standards References

- MPEG-4 Part 2 (Visual): standard number ISO/IEC 14496-2:2004; ISO title: Information technology - Coding of audio-visual objects: Part 2: Visual, 3rd Edition 2004-06-01; plus 14496-2:2004 Technical Corrigendum 1 Published 2004-06-15
- H.263: Video Coding for Low Bit Rate Communication. International Telecommunication Union (ITU) 1998
- MPEG-4 Video Verification Model version 18.0: document reference number ISO/IEC JTC1/SC29/WG11 N3908 dated January 2001
- MPEG-4 Part 2 (Visual) ISO/IEC 14496-2 Amendment 2, 2002-02-01: Streaming video Profile (contains Advanced Simple Profile)
- MPEG-4 Part 2 (Visual) ISO/IEC 14496-2:2001 Final Draft Amendment 3 FDAM 3:2003(E): New levels and tools for MPEG-4 visual (contains Advanced Simple Profile Level 3b)
- MPEG-4 Part 2 (Visual) ISO/IEC 14496-2 Microsoft reference software: FDAM1-2.3-001213 version 2 dated July 3rd 2000
- MPEG-4 Part 4 (Conformance Testing) ISO/IEC Study of CD 14496-4 N3067 1999-03-18, Visual clause w3067_4(v)
- MPEG-4 Part 4 (Conformance Testing) ISO/IEC 14496-4 MPEG-4 Normative ISO bitstreams dated 05/11/2001, specified in sections 4.5.3.1 and 4.5.7 of Reference 8
- MPEG-4 Part 4 (Conformance Testing) ISO/IEC 14496-4 MPEG-4 Donated bitstreams dated 14/07/2000, referred to in section 4.5.8 of Reference 8

- MPEG-4 Part 1 (Systems) ISO/IEC 14496-1: Information technology - Coding of audio-visual objects: Part 1: Systems, 3rd Edition dated March 2002
- 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Transparent end-to-end Packet-switched Streaming Service (PSS); Protocols and codecs (Release 5); reference 3GPP TS 26.234 V5.5.0 (2003-06)
- H.264/AVC Standard ISO/IEC 14496-10 (First Edition 2003-12-01): Information technology - Coding of audio-visual objects - Part 10: Advanced video coding with document JVT-K051 "Version 3 of H.264/AVC" dated 9 June 2004 (errata and Fidelity Range Extensions) and document JVT-L047d8 "Draft Text of H.264/AVC Fidelity Range Extensions Amendment" (AVC Amendment 1 Fidelity Range Extensions, Draft) dated 28 August 2004
- MPEG-2 Part 2 (Visual): ISO/IEC 13818-2 Second edition 2000-12-15 (2000 E): Information technology - Generic coding of moving pictures and associated audio information: Video with Amendment 1: Content description data (2001-12-15, corrected version 2002-08-01) and Technical Corrigendum 1 (published 2002-03-01)
- MPEG-2 Part 1 (Systems): ISO/IEC 13818-1 Second edition 2000-12-01 (2000 E): Information technology - Generic coding of moving pictures and associated audio information: Systems with Amendment 1: Carriage of metadata over ITU-T Rec. H.222.0 ISO/IEC 13818-1 streams (2003-08-01, corrected version 2003-10-15) and Technical Corrigendum 1 (published 2002-03-01) and Technical Corrigendum 2 (published 2002-12-01) and Amendment 3 Transport of AVC video data over ITU-T Rec. H222.0/ ISO/IEC 13818-1 streams, dated 2004-11-01
- DVD Standard for Video: DVD-Video Book Part 3: Video Specifications v1.13
- SMPTE "Proposed SMPTE Standard for Television: VC-1 Compressed Video Bitstream Format and Decoding Process" committee draft 2, revision 1, reference number SMPTE CD xxxM (otherwise referred to as VC-1)
- SMPTE 331M-2004 Element and Metadata Definitions for the SDTI-CP
- SMPTE 360M-2004 General Exchange Format (GXF)
- SMPTE 377M-2004 Material Exchange Format (MXF)
- Advanced Systems Format (ASF) Specification: revision 01.20.02; Microsoft Corporation, June 2004.
- MPEG-2 audio: ISO/IEC 13818-3:1998 Information technology Generic coding of moving pictures and associated audio information Part 3: Audio
- MPEG-2 AAC: ISO/IEC 13818-7:2004 Information technology Generic coding of moving pictures and associated audio information Part 7: Advanced Audio Coding (AAC)
- MPEG-4 AAC (AAC plus): ISO/IEC 14496-3:2001 Information technology Coding of audio-visual objects Part 3: Audio plus Cor1:2002, Cor1:2004, Cor2:2004, Amd1:2003, Amd2:2004, Amd3
- HE AAC codecs: ISO/IEC 14496-3:2001 Information technology Coding of audio-visual objects Part 3: Audio plus Cor1:2002, Cor1:2004, Cor2:2004, Amd1:2003, Amd2:2004, Amd3
- CEA-608-E, Line 21 Data Service, April, 2008.
- CEA-708-D, Digital Television (DTV) Closed Captioning, August, 2008.
- ANSI SCTE 20, Methods for Carriage of Closed Captions and Non-Real Time Sampled Video.

Appendix C: Software Maintenance

This section details the procedure to configure and reinitialize the Cerify application, backup and restore the database, update the Cerify license dongle options, and use an NFS client on Windows.

Configuring the Cerify Application

Sometimes you may need to modify the configuration of your Cerify installation to suit your environment. For example, some types of video servers require special configuration in the Cerify file client. Such properties can be changed by editing the file, `<installation directory>\jboss\server\all\conf\cerify.properties` using a normal text editor such as Notepad - the file must be saved as a plain text document. This file contains comments describing what each of the different settings does. For the new settings to take effect, the Cerify application should be stopped and restarted after the `cerify.properties` file has been edited and saved. Such configuration changes will need to be manually reapplied if the Cerify application is reinstalled or upgraded.

The settings in this file determine a number of important behaviors of Cerify. The default settings will work for most customers, but there are some workflow scenarios and video server models where modifications will be necessary. The following list gives examples of a few of areas that can be configured:

- Streaming mode. Should files be copied locally to Cerify before processing.
- FTP connectivity. For example, how many video server FTP connections are allowed and what the time-out should be.
- Copy bandwidth. Ability to limit the rate at which files are copied from video servers.
- Report customizing. The location of files that allow the user to customize the HTML reports generated by Cerify.
- File size stability. Whether and how long to wait for files to be stable before Cerify processes them.
- Port range used. Enables you to change the lower limit of the port number range that Cerify uses for internal communication. Set to 17250 by default.

Reinitializing the Cerify Application

Follow this procedure to reinitialize the Cerify application.

⚠ ***CAUTION.*** *This process results in the database being reinitialized and all information being stored in the database being lost. Carry out this process only if the data has no value or if a database backup exists.*

1. Shut down the Cerify application. In case of cluster configuration, shut down the Cerify on the Supervisor and all the Media Test Units.
2. Open a Microsoft Windows command prompt - this can be done by clicking **Start** >**Run** and typing `cmd` at the prompt.
3. Change to the Cerify directory (this is the folder where Cerify was installed on your PC) `cd C:\Program Files\Tektronix\Cerify`.
4. Execute the reset script by issuing the command: `reset-application`.
5. Start the Cerify application in the usual way after the script has finished executing.

NOTE. *In cluster configuration, `reset-application.bat` should be run only on Supervisor system.*

Database Backup/Restore Utility

The command line database backup/restore utility allows you to back up and restore your Cerify database. This tool performs the backup/restore operation by copying the folders where the Cerify database stores its data onto a secondary location on the Cerify host. This tool requires the Cerify application to be stopped for such backups/restores to be performed. For this reason, this utility cannot be used as an operational tool for backing up/restoring Cerify databases. In contrast, the backup/restore feature available on the Web UI uses the standard SQL format for data export/import and can be used even when Cerify is running.

On startup, the tool checks if Cerify is running and will only proceed if it is stopped. A clear error message is displayed if it finds it to be running.

NOTE. *It is not possible to use this utility to restore the database backed up by Cerify Web UI. Conversely it is not possible to restore the database backed up by this utility using Cerify Web UI.*

NOTE. *This utility can restore the backup which is created by Cerify Installer during uninstallation or upgrade.*

NOTE. *Backing up and restoring using this utility can sometimes be faster than using the backup/restore feature of the Web UI: especially when dealing with large databases.*

To run the database backup/restore utility, navigate to <Installation directory> and run the `CerifyDatabaseUtility.bat` file. Entering the `-option=help` command prompt provides help information on the command. The user will invariably need to pass in command line arguments to this script, so it may be useful to be explicit that they will need to open a “cmd”, then “cd” to the folder where the script lives and run the batch file with the appropriate options passed in as arguments.

Backing up the database using the CerifyDatabaseUtility

If you want to backup the current database to the default location, `C:\Documents and Settings\<username>\Cerify`, you can use the following command:

```
CerifyDatabaseUtility.bat -option=backup
```

If you want to backup the current database to a location other than the default location (for example, if you want to backup the database to the folder `C:\CerifyBackup`), use the following command:

```
CerifyDatabaseUtility.bat -option=backup -backupfolder=C:\CerifyBackup
```

After the backup is complete, you can see a `CerifyBackup_<version>_<timestamp>` folder in the directory you chose to do the backup.

Restoring the database using the CerifyDatabaseUtility

If you want to restore a backed up database from the default location into your current installation, use the following command:

```
CerifyDatabaseUtility.bat -option=restore
```

When this command is issued, you will also be prompted to backup the current database.

If there are more than one time stamped backup folders in the default location, then you will be asked to choose the backup folder to be used for restore.

If you want to restore a backed up database from a location other than the default location, you can use the following command:

```
CerifyDatabaseUtility.bat -option=restore -backupfolder=C:\CerifyBackup
```

Scenarios where database backup/restore utility can be used.

1. You can use the database backup/restore utility when you downgrade Cerify to the older version and you want to restore the database backup which is available for that version. Note that when Cerify is upgraded from an older version to a newer version, the installer will backup the database by default. Also, because the name of the backup folder contains both version and timestamp information, you can identify the correct backup folder to restore with ease.
2. You can use the database backup/restore utility to restore a database, if your database gets corrupted.

NOTE. *In cluster configuration, `CerifyDatabaseUtility.bat` should be run only on Supervisor system.*

Loading Example Jobs

Cerify is provided with some sample files (stored in the *<installation directory>/cerify_demo* folder) and a script to set up a number of Jobs, Profiles, Templates, MediaSets, and MediaLocation in Cerify to check these sample files. This is a convenient way of loading some sample content into Cerify and also verifying that Cerify is behaving correctly, for example after a software upgrade.

NOTE. *It is not possible to run this script again because it is not possible to create MediaLocations, Templates, and Profiles with the same name. If you need to run this script again, you should first clean out your database, using the procedure described in Reinitializing the Cerify Application (see page 196).*

Follow the steps below to load the example content:

1. Start Cerify.
2. Click **Start** > **Run** and type `cmd` at the prompt to open a Microsoft Windows command prompt.
3. Change to the Cerify directory (this is the folder where Cerify was installed on your PC `cd C:\Program Files\Tektronix\Cerify`.
4. Execute the script by issuing the command: `Demo_loader`.

After running this script, you will see new Jobs, Profiles, Templates, MediaSets, and MediaLocations in the Cerify UI and the Jobs will be processing. Once the Jobs are completed, you will be able to navigate the results and create reports.

NOTE. *In cluster configuration, `Demo_loader.bat` should be run only on Supervisor system.*

Capturing Cerify Status Information Using the Support Monitor Script

The support monitor script is designed to be run either on a Cerify system that is experiencing problems of some form or on a Cerify system that has just been setup so that the state of the system can be captured.

The script aims to automatically capture as much information as it can from a Cerify system that could be relevant to Tektronix engineers diagnosing the problem. The captured information is saved into a zip file for ease of transfer.

Running the Script

1. Run the Support Monitor by selecting **Start** > **All Programs** > **Tektronix** > **Cerify** > **Collect Support Diagnostics**.

   a. The support monitor provides the options to include a database backup and to capture the TCP traffic.

   b. You are prompted to enter y/n on each of these options. On entering **y**, the support monitor will include a database backup or TCP traffic information capture. If you enter any other key including **n**, the support monitor will skip the corresponding action.

   c. Pressing **X** when prompted creates a zip file of all the collected information and stops the support monitor.

   d. By default the support monitor captured will include the following information:

   – System information

   – Template information

   – License information (obtained by running the command line Cerify Dongle Assistant tool)

   e. In the case of a Cerify system experiencing problems, you should proceed to reproduce the problem while the support monitor is running. Once the problem has been reproduced, the support monitor can be stopped by pressing **x**. The support monitor will then start creating a zip file containing all system information captured. This may take several minutes; do not terminate the command window or terminate the script even if the script takes a while to exit.

   The support zip file will be named based on the current date and time, for example, support-2006-10-04-08-39.zip. The Zip file will be saved in `C:\Documents and Settings\<username>\cerify\Support\Supportmonitor-<date-time>.zip`.

2. Follow the on-screen prompts, until the utility fully completes creating the output file.

3. Send an e-mail or otherwise transfer the data to Tektronix along with a description of the problem.

Best Practices

- Be wary of allowing the monitor to run for too long - it is rarely useful to have very large trace files. It is recommended that the resulting .zip file should be kept less than 500 MB.
- When invoked, the supportmonitor utility will capture all of the system state data necessary for the analysis and troubleshooting of the system including network traffic to/from the video servers. Consequently, these files can become extremely large if care is not taken when setting up the system prior to capturing data with the tool. Extremely large files will make transfer of the files to Tektronix impractical.

  For example, if you are capturing data related to the interaction of Cerify with a particular FTP server where you are experiencing difficulty, perform the following steps:

  - Set up the system to create a new MediaSet.
  - Start the supportmonitor tool.
  - Attempt to add several files to the MediaSet, then stop the supportmonitor tool by pressing **x**.

  This should result in a trace file of manageable size, which should contain the necessary information for the engineering team to troubleshoot the problem.

NOTE. *Running the supportmonitor scripts on the Supervisor will capture the necessary data of the Supervisor and not the Media Test Units. To capture any necessary data of a Media Test Unit, you need to run the supportmonitor scripts on that particular Media Test Unit.*

To capture support diagnostics on a Media Test Unit, run the Support Monitor by selecting **Start** > **All Programs** > **Tektronix** > **Cerify Media Test Unit** > **Collect Support Diagnostics**.

Upgrading Dongle Options

This section describes how to update the Cerify license key (USB dongle) to enable additional functionality. You may want to do this in the following circumstances:

- To increase the number of files that may be processed simultaneously.
- To take advantage of new features in a software update that requires a license update (not all software updates require this).
- To operate a cluster.

Before this procedure can commence, a purchase agreement must be in place.

Option Upgrade Instructions

The basic procedure is for you to create a c2v (customer-to-vendor) file which securely encapsulates the current state of the dongle and to send this file to Tektronix. Tektronix will process this file, add the upgraded options, and return to you a new v2c (vendor-to-customer) file. This v2c file is used to update the dongle.

NOTE. *You must create a new c2v file every time you request an update. Updates will only be successful if they are based on an up-to-date c2v file generated from your current dongle. Old c2v files cannot be used.*

The upgrade process must be performed on the computer hosting the USB dongle. No other USB dongle should be connected to this computer.

Request Update.

1. Stop Cerify and ensure that the USB dongle is connected to the computer.
2. Click **Start** > **All Programs** > **Tektronix** > **Cerify** > **Update Cerify Dongle** to run the update tool. If Cerify is not installed on the computer with the dongle connected, then view this page in the online help from the computer that hosts the dongle and *click here* to run the tool.

NOTE. *The click here short cut will not be available on Media Test Unit.*

3. Click the **Collect Key Status Information** tab and click the **Collect Information** button.
4. Enter a file name for the c2v file to be saved, for example `C:\CerifyKey\TestUpdate.c2v`.
5. Send an e-mail to CSC-Analysts@tektronix.com, including the following:
   - The c2v file (for example `C:/CerifyKey/TestUpdate.c2v` in the example above).
   - Your Tektronix order number for the update.
   - The version number of Cerify you will use with this dongle. You can find this at the bottom of any page on the Cerify Web UI, for example, 6.0.1.34. If you are updating the dongle in preparation for a software upgrade, make sure the version number that you provide is the same as the version to which you are upgrading.

Apply Update.

1. Tektronix will send you an email with the v2c file attached. Save the v2c file to the computer that the dongle is connected to.
2. Stop Cerify and ensure the USB dongle is connected to the computer.
3. Click **Start** > **All Programs** > **Tektronix** > **Cerify** > **Update Cerify Dongle** to run the update tool. If Cerify is not installed on the computer with the dongle connected, then view this page in the online help from the computer that hosts the dongle and *click here* to run the tool.
4. Click the **Apply License Update** tab and click the **'…'** button.
5. Browse to the location of the v2c file and double-click the **v2c** file.
6. Click **Apply Update** to upload the changes in your license options to the USB dongle.
7. When prompted, enter a file name for the update receipt (c2v file) that is generated in response to the update. If a future update is required, this c2v file can be used to skip steps 1 to 4 in the *Request Update* process.
8. Restart Cerify.

Notes

- Any clustered Media Test Units are inoperable whenever the dongle is removed from the system. While you wait for the v2c file to be delivered, you can continue to use the dongle.
- The c2v and v2c files are encrypted. The v2c file is generated for the USB dongle that the c2v file was generated from; you cannot use the v2c file to update a different dongle.

Using NFS Client on Windows

This section describes how to install and use the Windows NFS Client.

The NFS client provided by Microsoft is used for browsing and accessing NFS shared files and folders on an NFS network. Follow these procedures to use NFS client on different Windows platforms:

For Windows XP

1. Download the NFS client from the Microsoft Web site. Search for “Unix services” on MS Windows in the Microsoft Web site to locate the NFS client.
2. Install the NFS client on the Windows system.
3. Select **Start** > **Programs** > **Windows services for Unix** > **Service for Unix administration**. A pop-up window is displayed with all the installed clients. Select **client for NFS** and right-click. If the Start option is disabled, then the NFS client is already started. If Start option is enabled, click the **Start** option to start the NFS client service.
4. Open Windows explorer. Select **My Network Places** > **Entire Network** > **NFS network** > **Default LAN**. This will display all the systems on which the NFS shared folders and files are present.
5. To process files on NFS using Cerify, map the folder having streams to be processed on to the current Windows system. Select **Tools** > **Map Network Drive** from the explorer window. Browse through the NFS network to the folder of choice on a machine. Map this path to a drive on the system.
6. In Cerify, create a MediaLocation using file:// protocol to this mapped network drive. For example, if the NFS shared folder is mapped to z: on the system, the MediaLocation URL will be file://z:/ .
7. MediaSets can then be created using this MediaLocation.

For Windows Server 2008

1. The in-built NFS client on the Windows Server 2008 has to be installed to access the NFS shares. To do this, select **Control Panel** > **Programs and Features**.
2. Select **Turn Windows features on or off** in the **Tasks** pane.
3. On the left pane, select **Roles** and right-click. Select **Add Role** options.
4. A wizard window opens. Select **Server Roles** in the left pane. Install the DNS Server, File Services and Network Policy and Access Services features (each option will open its own wizard for installation).
5. Select **Start** > **Programs** > **Administrative tools** > **Services for Network File System (NFS)**. A window opens displaying all the installed clients. Select **client for NFS** and right-click. If the Start option is disabled, then the NFS client is already started. If Start option is enabled, click the **Start** option to start the NFS client service.

6. To process files on NFS using Cerify, map the folder having streams to be processed to the current Windows system. This can be done by executing the following command from the command line:

   ```
   mount -o fileaccess=777 -u:<username>-p:<password> \\ComputerName\ShareName
   {DeviceName\*}
   ```

   - Where DeviceName is the Drive letter to which this was mapped.
   - * indicates next available drive letter (one of these options should be used).
   - Username is the login name for the system with NFS shared folders.
   - Password is the login password for the system with NFS shared folders.

7. In Cerify, create a MediaLocation using file:// protocol to this mapped network drive. For example, If the NFS shared folder is mapped to Z: on the system, the MediaLocation URL will be file://z:/ .

8. MediaSets can then be created using this MediaLocation.

Appendix D: CeriTalk

CeriTalk is an XML based API that lets you interact with Cerify from within other applications, making it possible to integrate Cerify with other content management, broadcast automation and workflow systems.

The CeriTalk API lets a client application integrate with Cerify in two distinct modes. An application requiring only to read status information could make use of CeriTalk XML Reports (see page 205) (CeriTalk1), which produces file-based XML reports that provide detailed status information and results of Jobs and media files. When tighter integration is required, including the ability to programmatically create and control Jobs and MediaSets in Cerify, a client application may use the CeriTalk SOAP API (see page 208) (CeriTalk2).

The CeriTalk SOAP API is available from Cerify version 4.0 and higher and exposes a richer set of functions compared to CeriTalk1. Though the SOAP API does not deprecate the XML reports-based interface, it should be preferred over XML reports for Cerify integration.

CeriTalk XML Reports

CeriTalk XML Reports support gathering status information pertaining to Jobs and media files as they are being processed.

It lets you get status information on a per media file or a per Job basis on events in the system, such as:

- Start of a Job being processed
- Start of a media file being processed
- A Job completing and passing its checks
- A Job completing and failing one or more of its checks
- A media file completing and passing its checks
- A media file completing and failing one or more of its checks

CeriTalk makes Cerify status information accessible to consumer applications through XML reports that are automatically generated as per preconfigured settings. To do this, you must define an Action Template specifying the events on which you would like the system to generate CeriTalk XML reports, and associate this Action Template with a Profile (see page 62) that can be used by a Job. It is possible to create multiple Action Templates to encapsulate the different kinds of events that you may wish to trigger CeriTalk report generation.

The location to which the system writes the CeriTalk XML reports is set through Report File Settings (see page 119), which can be accessed from the Admin Page (see page 111).

NOTE. *You must set the Report File Settings (see page 119) before CeriTalk XML reports can be generated.*

The file naming convention followed by CeriTalk XML reports is as follows:

Generic event	Report file name
Job Start	<Jobname>_Start_<timestamp>.xml
File Start	<Jobname>_<Filename>_Start_<timestamp>.xml
Job End	<Jobname>_End_<timestamp>.xml
File End	<Jobname>_<Filename>_End_<timestamp>.xml

The **Jobname** and **Filename** elements of report file names include names of the specific Job and media file against which a report was generated. The **timestamp** component represents the time at which the specific report file was generated, and is given in the `yyyyMMddTHHmmssSSS` format.

For example, a CeriTalk report file, named "QTJob_mini-short.mov_End_20061006T122515725.xml", can be inferred to have been generated at the "End" of processing a media file named "mini-short.mov" by a Job named "QTJob" - at 12:25:15:725 on 2006-Oct-06.

CeriTalk Report Attributes

The following table gives a list of some of the Job and media file attributes present in CeriTalk reports. The final column in the table refers to the Schema data type of the attribute, as defined in the XML Schema Part 2: Datatypes specification.

Attribute name	Description	Value set
name	Name of the Job or media file.	string
priority	The Job priority.	Enumeration: "Low", "Medium" or "High"
profile	Name of the Profile of the Job.	string
mediaset	Name of the MediaSet for the Job.	string
started	The time at which the Job or media file started processing.	dateTime (in yyyy-MM-ddTHH:mm:ss format)
completed	The time at which the Job or media file finished processing.	dateTime (in yyyy-MM-ddTHH:mm:ss format)
result	The result for a Job or media file.	Enumeration: "Success", "Warning" or "Error"
path	Location (URL) from where the processed media file was obtained.	string
size	Size of the media file (in bytes).	integer
status	Processing status for the media file.	Enumeration: "waiting", "copying", "processing", "complete", "paused" or "aborted"
progress	Progress of media file processing represented in percentage.	integer, in the range 0-100
url	A hyperlink that points back into the Cerify Web user interface, to a location where more information can be obtained regarding the Job, media file or alert.	URL

Attribute name	Description	Value set
alertid	An identifier that represents the specific type of alert that was raised. For a complete list of Cerify alert IDs, refer to Alerts (see page 127).	integer
title	A title representing the alert that was raised.	string
level	Severity level for the alert.	Enumeration: "info", "warning", "error" or "fatal"
location	The location of the alert, which is a Template rule or a video/audio frame that generated this alert.	string
start	Optional column only present for quality alerts. Refer to start and end positions of quality alerts (see page 60) for a detailed description.	string
end	Optional column only present for quality alerts. For detailed description, refer to start and end positions of quality alerts (see page 60).	string
channelindex	When processing a multichannel audio stream, this index will indicate the channel to which the alert applies. Only present for audio quality alerts.	integer
channelname	The name of the channel to which the alert applies, as given by the audio standard. Only present for audio quality alerts.	string
type	The type of alert raised.	Enumeration: "parameter", "container", "video", "audio" or "system"
details	Alert details.	string

In addition to the above list of attributes, CeriTalk reports reproduce all of the stream information captured during media file processing. These attributes provide metadata on the container, video and audio layers of the media file and are presented as key-value pairs in the report.

For a complete list of the attributes available in CeriTalk reports refer the CeriTalk schema definition. If you are viewing this page from the Help pages in the Cerify Web user interface, click the following link to view the CeriTalk XML schema definition and the Template Information schema definition.

To download the XML Schemas:

- In Microsoft Internet Explorer, right-click the above link and select the **Save Target As** option from the pop-up menu.
- In Mozilla Firefox, right-click the above link and select the **Save Link As** option from the pop-up menu.

If you are viewing this page from a printed or PDF version of the Cerify user manual, please access the URLs `http://your_cerify_host/CerifyReports.xsd` and `http://your_cerify_host/TemplateInformation.xsd`, replacing `your_cerify_host` with the IP address or hostname of your Cerify system, to view the respective schema definitions.

CeriTalk SOAP API

The CeriTalk SOAP (Simple Object Access Protocol) API provides remote programmatic access to control the Cerify standalone system and clusters. The current version of this API provides methods to:

- Create a static MediaSet
- Add a media file to an existing MediaSet
- Delete a static MediaSet
- Create and control Jobs
- Get details of Template checks performed for a Job
- List available Profiles
- List available MediaLocations
- Obtain the status and results of Jobs and Media Files
- Monitor the state of the system

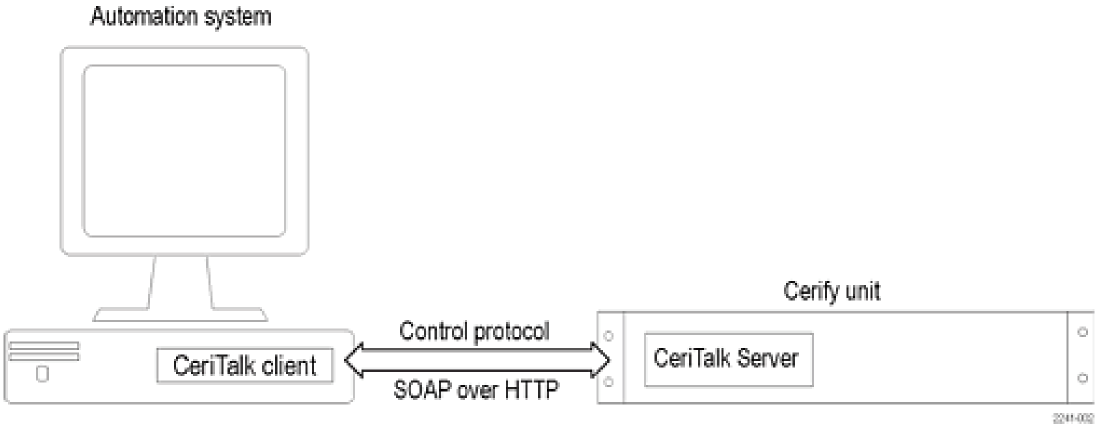
CeriTalk SOAP API does not provide support for:

- Creating dynamic MediaSets (drop-boxes)
- Creating or editing Templates, Profiles, and MediaLocations
- Modifying administration or options settings

System

The CeriTalk API is implemented using standard Web service technology, which allows integrators to take advantage of off-the-shelf tools and to use a wide range of programming languages to access Cerify.

The following figure shows the entities involved in integrating Cerify with an automation system using the SOAP API.



Integrating Cerify

The Cerify system hosts a CeriTalk server, which responds to CeriTalk API method calls. The CeriTalk client code runs on the automation system and calls CeriTalk API methods as required by the automation system. In the case of a cluster, the CeriTalk client communicates only with the Supervisor unit and never directly with the Media Test Units.

Messaging Model

All CeriTalk messaging takes place using synchronous remote procedure calls carried via SOAP. Each method has a set of input parameters and returns the requested data or an error message indicating the reason for failure. For an overview of the available methods, refer to Method Summary (see page 210). If you are viewing this page from the Help pages in the Cerify Web interface, click here to view the Web service definition (WSDL) file for the API. Alternately, if you are viewing this page from a printed or PDF version of Cerify user manual, please access the URL `http://your_cerify_host/CeriTalk?wsdl`, replacing `your_cerify_host` with the IP address or hostname of your Cerify system, to view the Web service definition (WSDL) file.

CeriTalk is a stateless protocol. As long as the appropriate entities exist at the point a method is invoked, the method can safely be invoked. Asynchronous event notification of CeriTalk clients is not supported. Therefore, events such as the completion of a Job or the raising of an alert have to be detected by the CeriTalk client by polling the Cerify system using the appropriate status method call. It is recommended that polling does not occur at a frequency of greater than one method call a second.

SOAP

The Simple Object Access Protocol (SOAP) is a lightweight protocol for exchanging structured information between endpoints in a distributed environment. SOAP uses XML to define an extensible messaging framework and allows messages to be exchanged over a variety of underlying protocols. SOAP 1.2 is defined by W3C in references SOAP 1.2 Part 1: Messaging Framework and SOAP 1.2 Part 2: Adjuncts.

Protocol Binding. SOAP is independent of the protocol that is used to transmit messages. The protocol binding provided by the CeriTalk API is the SOAP HTTP binding.

Method Invocation. SOAP in itself does not define any programming model or application semantics; instead it defines a simple mechanism that can be applied in a large variety of systems. The CeriTalk API uses SOAP to encapsulate a request-response style programming model. The client sends SOAP messages to invoke API methods: the parameters of the method are serialized into the message. Method results are returned through the SOAP message response. URL references to image data may be included in the results to provide media thumbnails.

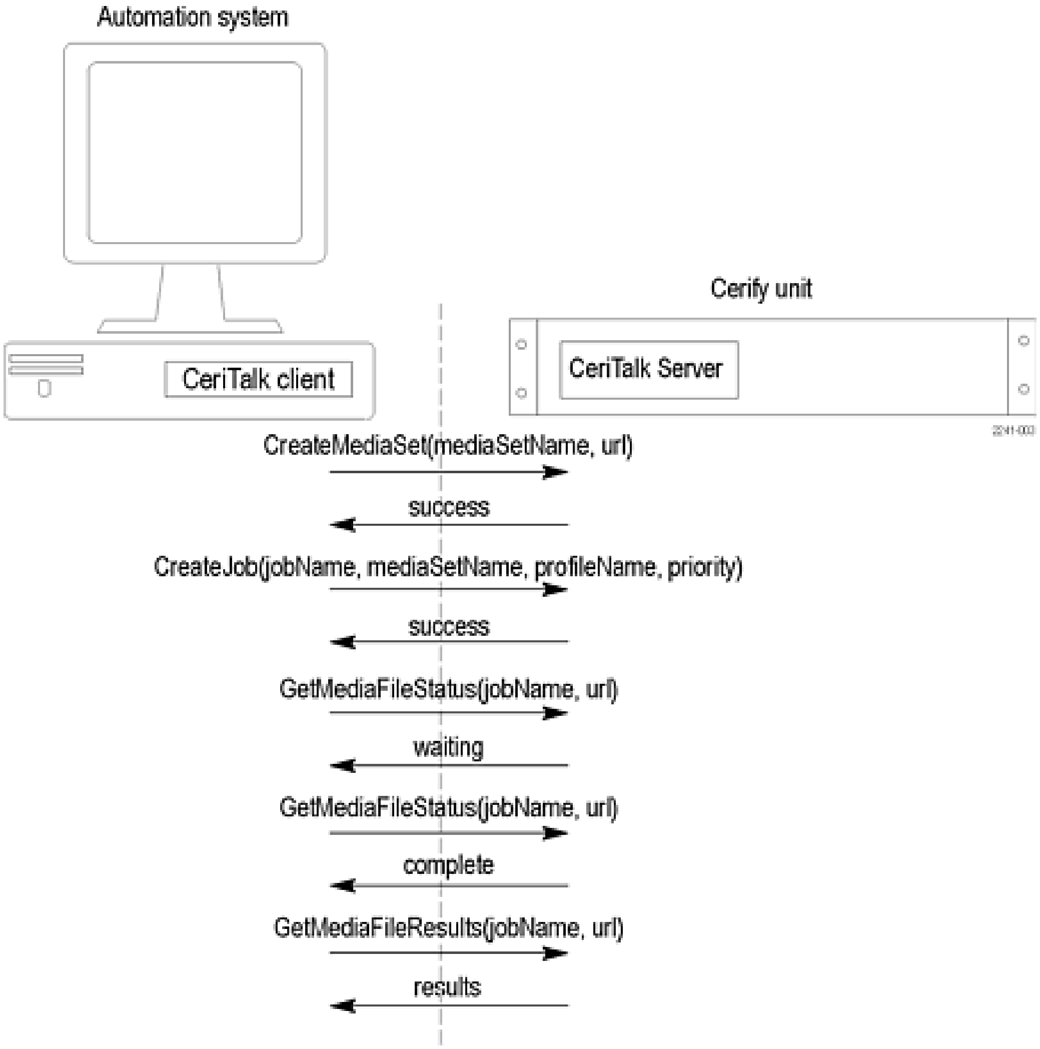
Method Summary

The following table gives a brief overview of the operations provided in the CeriTalk SOAP API. For more detailed documentation, consult the Software Development Kit (SDK) (see page 212).

Operation Name	Description
AddMediaFileToMediaSet	Add a new media file (specified by URL) to an existing MediaSet (specified by mediaSetName). The URL must be within the MediaLocation specified.
ControlJob	Change the state or priority of an existing Job.
CreateJob	Create a new Job using an existing MediaSet and Profile.
CreateMediaSet	Create a new MediaSet. The media file specified by URL is added to the MediaSet. The URL must be within the MediaLocation specified.
ControlMediaSet	Change the state of a MediaSet. Currently supports deletion only.
GetJobResults	Retrieve the test results for a given Job (specified by jobName). If a complete set of results is desired, use the GetJobStatus operation to ensure that the Job has a status of "complete" before requesting the results.
GetTemplatesForJob	Retrieve the Template details for a given Job (specified by jobName). A complete list of Template checks that were applied to the media files in the Job, along with parameter values for each check, is returned. This information can be used to accurately reconstruct the Templates used with the Job specified on a different Cerify system using the Template Import (see page 72) feature.
GetJobs	Retrieve a list of active (not archived) Job names according to Date and/or Status criteria. If createTimeRangeFrom is populated, then all active Jobs created on or after that date will be returned. If createTimeRangeTo is populated, then all active Jobs created on or before that date will be returned. If status is populated, all active Jobs having that status will be returned. More than one criterion can be populated, in which case the results are ANDed together.
GetJobStatus	Retrieve the status for a given Job (specified by jobName).
GetMediaFileResults	Retrieve the test results for a given media file (specified by URL) within a given Job (specified by jobName). If complete results are required, use the GetMediaFileStatus operation to ensure that the media file has a status of "complete" before requesting the results.
GetMediaFileStatus	Retrieve the status for a given media file (specified by URL) within a given Job (specified by JobName).
GetProfiles	Retrieve a list of all active (non-archived) Profile names.
GetSystemStatus	Retrieve overall status information in order to make Job assignment decisions. Returned values are: total Jobs pending and number of Media Test Units in cluster (this is the number of Jobs shown as "Waiting" in the Web UI).
GetMediaLocations	Retrieve a list of names and URLs of all MediaLocations that are available.

Typical Use Case

The figure below illustrates a typical use case of this API: initiating a Job to check a newly ingested media file and collecting its results.


Automation system
Cerify unit
CeriTalk client
CeriTalk Server
2241-003
CreateMediaSet(mediaSetName, url)
success
CreateJob(jobName, mediaSetName, profileName, priority)
success
GetMediaFileStatus(jobName, url)
waiting
GetMediaFileStatus(jobName, url)
complete
GetMediaFileResults(jobName, url)
results

Typical use case

Software Development Kit (SDK)

A Software Development Kit (SDK) is provided in conjunction with the CeriTalk SOAP API. This comprises the following:

- Sample CeriTalk client code for Java and .NET platforms
- Detailed HTML documentation of all operations, their inputs, outputs, and faults
- WSDL (Web Services Description Language) file describing the SOAP API
- XML schema definition used by the WSDL

To retrieve and unpack the SDK:

- Download the archive file to the target machine. If you are viewing this page from the Help pages in the Cerify Web interface, select either

  CeriTalk SDK (zip: Windows) or

  CeriTalk SDK (tar.gz: UNIX/Linux)

  to begin the download.

  If you are viewing this page from a printed or PDF version of the Cerify user manual, please access the URL `http://your_cerify_host/ceritalk-sdk-VERSIONNUMBER.zip` or `http://your_cerify_host/ceritalk-sdk-VERSIONNUMBER.tar.gz`, replacing `your_cerify_host` with the IP address or hostname of your Cerify system and VERSIONNUMBER with the full software version number of your Cerify installation (you can find this in the footer section of each page of the Cerify Web user interface), to download the CeriTalk SDK package of your choice.
- Unpack it, using an appropriate tool such as `tar` or WinZip. The contents will be unpacked into a directory named `ceritalk-sdk-VERSIONNUMBER`.

Contents of the SDK.

- `README.txt`: Explains the contents of the SDK. It is a copy of this list.
- `doc/`: Detailed HTML documentation about the API methods can be found in `CeriTalk.html` in this folder.
- `sample_code/`: Sample code for a representative automation use-case.
- `sample_code/common/`: Common components used to build sample code: WSDL and schema. These can also be downloaded from a Cerify system but are provided here as a convenience.
- `sample_code/java/`: Sample code written in Java using the Apache Axis SOAP stack. Consult the `README.txt` file in this directory for instructions on how to build and run the Java client.
- `sample_code/dotnet/`: Sample code written in C# using the Microsoft .NET Framework SDK. Consult the `README.txt` file in this directory for instructions on how to build and run the .NET client.

Appendix E: Configuring Your Cerify Installation

This section provides information on modes of operation, configuring your installation for best performance, and commercial off-the-shelf platform recommendations.

Number of Channels

This number is derived from the throughput expectation for the installation and is the single most important factor influencing selection and configuration of the hardware on which to run Cerify. All guidance in this section of the document assumes that the number of channels that you would like to license is determined in advance.

The processing speed of Cerify is affected by a number of factors:

Content Format

It is important to establish the exact type of content you want to process. This includes: the codec standard, the profile of the standard, the resolution, the bit rate, and whether the content is long-GOP or I-frame only.

The longer the play time of the media file, the longer Cerify will take to process the file. The play time and processing time are roughly proportional.

Cerify Templates

Cerify performance will depend on the checks that Cerify is running, as defined by the Templates settings in the chosen Profile. The processing time of a media file increases as baseband tests are added. The parameters used in the baseband checks also affect processing time. For example, the RGB gamut and Luma limit checks become significantly shorter if low pass filtering is not enabled.

External System Factors

The following external system factors also influence the processing speed of Cerify:

- File transfer protocol used. For details see “Supported Protocols” under MediaLocation Management
- Referenced or encapsulated container format
- Network infrastructure
- Video server throttling

Of these four factors, the content format has the most significant impact on speed. However, even for a given content format, the processing speed of Cerify can vary by a multiple of 3 or 4 due to the other factors.

Due to a high degree of potential variance in performance, the most reliable way to predict the performance of the product and determine the number of channels required to meet a given throughput, is to run well-designed trials that are representative of the intended application.

Contact your Tektronix representative for help in designing trials to determine the number of channels that will meet your requirements.

NOTE. *All guidance in subsequent sections of this chapter assumes that the number of channels you want to license is determined in advance.*

Modes of Operation

Cerify processes media files in two modes that differ in their use of network and hard disk usage: streaming and copying. The choice of mode is primarily dependent on the format of the media file being analyzed but may be a result of media server connectivity configuration.

Streaming Mode

Some media file formats are suitable for analysis as they are read directly from the media server hosting the file and do not require to be copied to the local hard disk of the Cerify system. These media file formats are referred to as "streamable" and this mode of operation is referred to as the “streaming” mode.

Examples of streamable formats are:

- DV
- GXF
- MPEG-2 Program Stream
- MPEG-2 Transport Stream
- MXF frame-wrapped
- MXF and QuickTime MOV files with external-reference media files
- QuickTime MOV or MP4 files where the Movie (moov) atom is BEFORE any Media Data (mdat) atoms in the file

Streamable files do not require significant disk storage on the Cerify system above that required for the normal operation of Cerify. There is no requirement for particular disk configuration to provide performance benefits. The network configuration can affect processing performance, especially if there are many media files being processed simultaneously.

Follow the steps below to determine if a file is streamable or not:

1. In the **Admin** page, set the **Stream Information** value to **all attributes**.
2. Process the file in Cerify.
3. After the processing is complete, click the job name to get the job details page. Click the file path in the job details page to the get the processing result page.
4. Under the container information section, a properly called “Streamable” is displayed with the value as “yes” if the file is streamable and “no” if the file is non-streamable.

Copying Mode

Some media formats need to be copied to the local hard disk of the Cerify system before processing can begin. This is usually because the format of the file contains information at the end of the file that is critical for correct processing of the file. Some media files will need to be copied entirely before processing can begin whereas some only require to be copied partially. This mode of operation where files are copied in full or part to the Cerify system's local hard disk is referred to as the "copying" mode and such file formats are referred to as "unstreamable".

Examples of unstreamable files are:

- ASF
- QuickTime MOV or MP4 files where the Movie (moov) atom is AFTER any Media Data (mdat) atoms in the file
- Packetized streams that have audio/video synchronization issues where there is a significant delay between the audio and video presentation times.

For unstreamable files, in the worst-case scenario, an entire media file will need to be copied to the local Cerify disk. Sufficient storage is required on the Cerify system along with a disk configuration that is optimised for high concurrent read/write performance. The network configuration can affect the latency to begin processing, especially if there are many media files being copied simultaneously.

NOTE. *This mode of operation requires high network and disk bandwidth. In a multi-channel situation, analyzing media files with a number of external reference files, it is possible that the network copy will require more disk bandwidth than is available. This can then cause application performance issues where the disk bandwidth becomes a bottleneck for the system. To mitigate this, the network bandwidth used for a file can be limited to a rate to prevent the disk from becoming overloaded with write requests. You can do this by adjusting the property "vqual.io.maxfilecopyrate" in cerify.properties. This property limits the total rate at which Cerify will attempt to retrieve asset data.*

Force Copy

The mode of operation is normally automatically selected on a per file basis by the system based on the characteristics of the file under test. However, you can force Cerify to operate in the "copying" mode where it treats streamable files as if they are unstreamable by copying them to the local disk as quickly as possible while it starts processing the file.

This feature is intended for use in situations where the media file server has a limited number of connections available and Cerify is processing a media file that references other external media files; for example, MXF or QuickTime MOVs. In this situation, Cerify may need to copy the main media file entirely to free up a server connection to obtain one of the reference media files. If there are one or more other reference media files and no other available connections, Cerify will repeat this behavior until all of the reference files are copied to the Cerify system. This behavior is also desirable in the situation where there are fewer server connections available than Cerify channels. To fully utilize the processing capability of Cerify, it is necessary to copy the files locally so that the number of media server connections does not limit the Cerify processing capability.

To enable this feature, set the Cerify system property cerify.forcecopy to true. See Software Maintenance (see page 195).

Growing Media Files

In most cases, Cerify cannot fully process a file from a media server while the file is still growing in size. This is due to limitations of most FTP and SMB servers where the media server is unable to reliably transfer such growing files to Cerify over these protocols.

The only situation where it is possible to process growing files from media servers is over the FTP protocol when the FTP server used to access the media will reliably ensure that the whole file is transferred to Cerify, even if the file size changes after the FTP transfer begins.

NOTE. *To process growing files, the file stabilization checks performed by Cerify must be disabled. This can be done by setting the value of the Cerify system property cerify.filestreamretry to 0. In addition, you will also need to set the vqual.io.ftp.filesizeunknown system property to true. For information on how to modify Cerify system properties, refer to Software Maintenance (see page 195) .*

Files of Unknown Size

In some cases, video servers do not report the size for the file being transferred to Cerify for testing. This results in Cerify considering such files as ones with an unknown size.

This typically happens in the following two cases:

Servers that do not report file size. In this case, the file size is not reported, often because the file does not exist on the server but is created and streamed to Cerify on request. This happens with Grass Valley servers when accessed through the Advanced Media Protocol (AMP) service using the gvg:// protocol from Cerify. For more information on the gvg:// protocol, refer to Supported connectivity types and protocols .

FTP Servers with Virtual File Systems. In this case, the server maintains a virtual file system, where it is necessary to obtain the file in a number of different formats. This is achieved by Cerify requesting a file with the same base name as reported in the FTP listing, but with a different file extension.

For example, Nexio servers could return an FTP listing that shows assets to have the .lxf extension, but requires Cerify to transfer and process .mxf files of the same base name. Such behaviour in Cerify – of being able to switch file extensions before FTP transfers – is achieved by setting the vqual.io.ftp.filegetprefix and vqual.io.ftp.filegetsuffix system properties. To handle such situations, you must set the vqual.io.ftp.filesizeunknown Cerify system property to true. Refer to Configuring the Cerify Application (see page 195) for information on how to modify Cerify system properties.

In cases, when the file size is unknown, Cerify has no way of sensibly reporting the progress since Cerify requires the file size to calculate the progress percentage. As a result, Cerify reports the file to be at 0% progress for the duration of processing. Eventually, when Cerify has stopped receiving file data from the server, it considers the end of the file to have been reached and accordingly moves the progress percentage from 0% to 100%.

NOTE. *Do not interpret this behaviour which causes files to appear "stuck" at 0% for long periods as the absence of processing. It is possible to identify this scenario by the presence of stream information being reported against the file even though of the progress percentage reported being 0%.*

Configuring Your Cerify Installation for Best Performance

Choosing the Number of Hard Disks and Their Sizes

The amount of storage space you'll need on the Cerify unit depend on four factors:

- The number of channels licensed
- The average size of the files you will be testing
- The mode in which Cerify operates (Streaming/Copying)
- The level of fault tolerance you want to build into your system

In copying mode, the amount of temporary data that Cerify will need to keep on the disk is determined by the number of channels you want to run multiplied by the average size of the files you will be testing. In streaming mode, since the files are not copied on to the disk, the temporary storage requirement for Cerify is minimal, typically of the range of 10-20% of the temporary storage space required for copying mode. It is recommended that the temporary storage space be served by a dedicated hard disk (or RAID array).

In addition to the amount of temporary storage required, the selected platform will also need to accommodate the Cerify application and its database. It is recommended that the Cerify application and the operating system be confined to two separate hard disks, each of the same size, so they could be effectively incorporated into a RAID array that offers redundancy for these two critical components.

Consider the following installation:

- Running 4 channels
- Using copying mode
- Processing files that are on average 75 GB in size
- Requiring fault tolerance on operating system and the Cerify application

The number of disks recommended would be calculated as follows: 4 * 75 GB = 300 GB of temporary space, served by a RAID array consisting of 3 disks each of 150 GB. Two separate disks, one each for Cerify and the operating system. It is recommended that you provide for this with two 500 GB drives for enterprise level usage. That is a total 5 disks two of them about 500 GB in size and three of them 150 GB in size each.

To run the same number of channels in the streaming mode, you will need only 3 disks, two of them about 500 GB in size for the operating system and the application. This is the same as in the case of the copying mode, but a single hard disk of around 100 GB size servicing the temporary storage for Cerify.

Partitioning Hard Disks

The three major components that make up the hard disk usage on your Cerify installation are:

- The operating system
- Cerify application (software and the database)
- Temporary storage for copied media files and page files created by the system

Best results are achieved when these three components are confined to separate logical drives/partitions. For example, the operating system being installed on the C:\ drive, Cerify being installed on D:\ and an E:\ drive being dedicated for system page files and temporary storage for Cerify.

Adding Fault Tolerance

In addition to the requirements for logical drive partitioning, it is also generally desirable to add fault tolerance to Cerify installations in operational use, especially when used in an enterprise setting. This can be achieved by creating RAID arrays using the hard disks in your computer. This will let the system tolerate disk failures without suspending the services and gives an opportunity for fault repairs while the system remains online.

NOTE. *The use or otherwise of RAID on the Cerify machine does not in any way influence the functional behavior of Cerify and is not a pre-requisite. However, there are certain performance gains to be achieved by doing this, especially when operating in the copying mode. It is highly recommended that you install Cerify into a system with appropriately configured RAID arrays for reasons of data security and performance.*

⚠ **CAUTION.** *To prevent a loss of data, normal data protection measures like routinely backing up the Cerify database should be performed irrespective of whether or not your Cerify system is fault tolerant. Such backups should preferably be made onto a location outside the Cerify unit. See Database Backup (see page 118).*

Due to the differences in the levels of fault tolerance desired in different use cases, the disk configurations recommended also vary. Some of the typical usage scenarios and the recommended RAID configurations to use are documented below:

Scenario 1: Single Channel Install. Due to the non-critical nature of single channel installs, they generally do not use a RAID configuration. If database or OS redundancy is desired, it is recommended that you follow the same RAID configuration guidance that applies to multi-channel installations for your mode of operation. Note that this may require provision of additional hard disks and a RAID adapter to the single channel platform.

Scenario 2: Four Channel Install, Streaming Mode. The recommended hard disk partitioning layout in this case is:

- Hard disk 1: Partition C:\
- Hard disk 2: Partition D:\
- Hard disk 3: Partition E:\

It is assumed that hard disks 1 and 2 are a group of disks of the same size. Choose the number and size of disks that best fits your level of usage when operating in the streaming mode. See Choosing the Number of Hard Disks and Their Sizes (see page 217)

The very low amount of disk access in the streaming mode does not require the temporary storage to use a RAID configuration. It is recommended that you use hard disk 3 as the temporary storage location for Cerify and configure your operating system to write page files to it.

Scenario 3: Four Channel Install, Copying Mode. The recommended hard disk partitioning layout in this case is:

- Hard disk 1: Partition C:\
- Hard disk 2: Partition D:\
- Hard disk 3: Partition E:\
- Hard disk 4: Partition E:\
- Hard disk 5: Partition E:\

It is assumed that hard disks 1 and 2 are a group of disks of the same size and disks 3, 4 and 5 are another group of disks of the same size. Choose the number and size of disks that best fits your level of usage. See Choosing the Number of Hard Disks and Their Sizes (see page 217)

The recommended RAID configuration and application layout for this scenario is: Create a RAID1 array to hold the C:\ and D:\ drives and install the operating system on C:\ and the Cerify application on D:\.

Create a RAID0 array using the hard disks 3, 4 and 5 and use it as the temporary storage location for Cerify and configure your operating system to write page files to it.

Such a configuration will provide high levels of fault tolerance for the operating system and the application while also improving overall performance by making disk access into the temporary storage much faster than on a system that is not using a RAID configuration.

NOTE. *The temporary storage location used by Cerify can be selected during the installation. This can also be changed after the installation by modifying the Cerify system property cerify.temp.location to the desired folder. See Software Maintenance (see page 195).*

Performance Tuning Your Operating System

The overall performance of your Cerify unit can also be enhanced by fine tuning the performance of the operating system it is installed on. Listed below are some Windows system parameters that may be modified for better Cerify performance.

NOTE. *The following table focuses primarily on Windows Server 2008, 64-bit Standard Edition, which is the recommended enterprise platform for Cerify. It is possible that some of the parameters are not available on other Windows operating systems and changing them may not produce the desired effect on such platforms.*

Parameter	Description
Network bandwidth parameters	
AsynchronousCredits	This parameter limits the number of concurrent asynchronous SMB commands in a single connection. The default value for this parameter is 512. The value of this parameter can be increased to achieve greater concurrency when using Cerify to access files from a remote video server over the smb:// protocol. This setting can be accessed through the registry key: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Lanmanserver\parameters.
Disk I/O parameters	
Stripe Unit Size	This parameter controls the data stripe size used by the NFS file system. The default value for this parameter is 64 KB, but, can be adjusted between 4 KB to 1 MB. Increasing the value to 1 MB could help improve file system performance under typical Cerify usage. This value can be set at the time of RAID configuration. The RAID utility asks you to select the Stripe value ranging from 8 KB to 1 MB. Recommended values are 64 KB for RAID 1 and 128 KB for RAID 0.
TreatHostAsStableStorage	This parameter disables the processing of write flush commands from clients. The default value for this parameter is 0. Changing the value of this parameter to 1 could improve server performance and reduce client latency. This setting can be accessed through the registry key: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Lanmanserver\parameters.
AdditionalCriticalWorkerThreads	This parameter affects the number of threads that the file system cache uses for read-ahead and write-behind requests. The default value for this parameter is 0. Raising this value can allow for more queued I/O in the storage subsystem and can improve I/O performance. This parameter can be access through the registry key: HKLM\SYSTEM\CurrentControlSet\Control\SessionManager\Executive. It is recommended that you change this value to 16.
MaximumTunnelEntries	This parameter controls the size of the NTFS tunnel cache. The default value for this parameter is 1024. Reducing this value can significantly improve file deletion performance for directories that contain a large number of files. This setting can be accessed through the registry key: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\FileSystem.
Disabling File Last Access Time Update	By default, Windows Server 2008 disables last-access time updates. It is recommended that it be left disabled as it increases CPU overhead for file read/write/open operations. This setting is defined by the registry data word “NTFSDisableLastAccessUpdate” defined in the registry key: HKLM\System\CurrentControlSet\Control\FileSystem\. Set the value of this entry to 1 to disable last access time updates.

NOTE. *The caching policy of your server can have a major performance impact on your hardware. You can enable Write Caching property by right clicking **Drive Names > Hardware > Properties-Policies > Enable Write Caching**. Depending on the RAID hardware configuration used, enabling Adaptive Read Ahead and Write Through is also recommended.*

⚠ ***CAUTION.*** *It is recommended that the TCP/IP Offload Engine (TOE) option be left disabled on network interfaces that support it. It has been observed that enabling this option can lead to intermittent connectivity errors when processing multiple files simultaneously over the ftp:// protocol.*

Commercial off-the-Shelf Recommendations

The following hardware specification is recommended for a 4-channel Cerify operating in copying mode.

Manufacturer: Dell Corporation

Model: Power Edge 2950

Processor	Dual Quad Core Xeon X5450 (3.0 GHz, 2x6 MB, 1333 MHz FSB)
Riser	Riser with PCI Express Support (2x PCIe x8 slots; 1x PCIe x4 slot)
Memory	16 GB (4x4 GB Dual Rank DIMMs) 667 MHz FBD
Chassis	PE2950 III - Chassis 3.5HDD x6 Backplane
Optical drive	DVD-ROM Drive SATA with SATA Cable
RAID adapter	PERC 6/i, Integrated Controller Card x6 backplane
	PE2950 III C8 MSS R1/R5 Add-in PERC 5/i / 6/i
Networking	Intel PRO 1000PT Dual Port Server Adapter, Gigabit NIC, Cu, PCIe x4 TCP/IP Offload Engine 2P
Hard disks	500 GB Near-Line SAS 7.2k 3.5" HD Hot Plug x 2, in a RAID1 array 300 GB SAS 15k 3.5" Additional HD Hot Plug x 3, in a RAID0 array

NOTE. *The number and size of the three 300 GB hard disks to include depends on the average size of your files and the number of channels you are using. In streaming mode, the second RAID is not required and you can use a single disk for temporary file storage. Choose the amount of storage and to configure your hard disks for best performance. See Configuring Your Cerify Installation for Best Performance (see page 217).*

Glossary Terms

Administrator

A type of user who has unrestricted access to the system, including access to functions for creating and modifying MediaLocations and users.

Alert

Alerts announce any checks that fail as a Job executes. Each alert indicates the severity of the failure, as well as where and why the check failed. The system gathers alerts associated with a particular Job, so that you can access the results from the top level and easily navigate to the details (such as which individual frames have alerts).

AMP

Advanced Media Protocol of Grass Valley.

Audio Channel

A sequence of data representing an audio signal intended to be reproduced at one listening position. For example, a stereo audio track consists of two channels, while a Dolby Digital 5.1 track consists of six channels.

Audio Track

A grouping of audio channels that are to be played back at the same time. This may include separate streams in Media Files such as MXF that are played back together. For example, a file containing Spanish language, English language, and a voice-over from the director contains three audio tracks.

Client machine

An individual computer that is used to access the system through a Web interface or via the CeriTalk API.

Container file

A file that acts as a container or wrapper for one or more elementary streams. Rules for handling container files are configured using a Container Template.

Channels

The term “channels” refers to the number of media files that a Cerify unit will be required to test in parallel.

Cluster Network

The cluster network contains a single Supervisor and one or more Media Test Units.

Customer Network

The LAN on which the video servers are located from which Cerify accesses the media files it processes. Typically, this might be the broadcast network.

Elementary stream

Compressed digital media data relating to a single video or audio component.

Job

A Job associates a MediaSet with a Profile. By creating a Job, you request the checks defined by the Profile be applied to the files in the MediaSet.

License dongle

A USB key device. To enable files to be processed, a license dongle must be available to the Cerify system.

Media file

A file containing compressed digital media: audio, video, or both.

MediaLocation

A local or network location where media files can be found, identified by a unique name within the system; set up in the system by the administrator. Typically, this network location corresponds to the Ethernet port of a video file server.

MediaSet

A set of media files; can be static or dynamic. A static MediaSet is a collection of media files chosen from one or more of the MediaLocations. A dynamic MediaSet (or DropBox), is a directory that is continually monitored by the system for new media files. If a Job is associated with a DropBox, every file that appears in the DropBox over time will be processed.

Media Test Client

The software component that processes media files.

Media type

The specific format of a media file or stream.

Media Test Unit

The Media Test Unit is responsible for the actual processing of the digital media files in a cluster. It applies the user-specified tests and reports back the results to the Supervisor unit. The term is sometimes abbreviated to MTU.

Profile

A Profile gathers together different types of Templates, providing a complete set of checks to be applied to a MediaSet. Depending on the requirements of the MediaSet to be checked, any or all types of Templates may be included.

Poster Frame

A Poster Frame is the first visually distinct frame of a video asset following any white or black lead-in.

Reports

Reports provide users with a way to query the system database and obtain information in a predefined format. A Job report presents the results of a particular Job in tabular form.

Server

Refers to a system which provides one or more services to client devices. Cerify is a server because it provides a Web server to allow users to control the unit via a Web browser. Internally, Cerify provides other services, such as a database, and license management.

Standalone system

Standalone system is a single machine that combines the functionality of a Supervisor unit and a Media Test Unit.

Supervisor

The Supervisor controls the cluster. It hosts the database and the Web server and is responsible for controlling the cluster network.

System

System is used to refer to the entire Cerify system and the PC on which it resides.

Template

A collection of checks to be made when checking a media file. The four types of Templates are:

- Container Template: gathers rules that apply to the transport/container layer of a media file.
- Video Template: gathers rules that apply to the digital video content of a media file.
- Audio Template: gathers rules that apply to the digital video content of a media file.
- Action Template: gathers rules that specify actions to be applied as a result of processing a media file.

Users

The system can support multiple users accessing the system via the Web UI. Each user has name and password credentials which they must use to log in to the system. These credentials will have been assigned by a user who has administrator access to the system. When creating a user, an administrator can choose whether to give the new user administrator rights.

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