

Cerify
Automated Video Content Verification System
Release Notes

This document supports software version 7.5.

www.tektronix.com



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Tektronix

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Release notes

These release notes provide the following information for the Cerify Automated Video Content Verification System:

- A list of the new Cerify features available in software version 7.5.1
- A list of important defect fixes that have been made in software version 7.5.1
- A list of known Cerify installation and operational issues relating to software version 7.5.1



CAUTION. *To prevent loss of data in the unlikely event of the database becoming corrupted, it is strongly recommended that you regularly back up the Cerify database. See the Database Backup section of the Cerify User Manual for instructions on how to perform this task.*

Product documentation

The following table lists the Cerify user documentation that supports software version 7.5.1.

Table 1: Product documentation

Document	Tektronix part number	Description
Cerify Quick Start User Manual (English)	071-2680-06	Provides installation instructions, system requirements, concepts of how to operate the software, and basic procedures for common tasks. This is a printed manual and is also available on the product DVD and on the Web at www.tektronix.com/downloads .
Cerify User Manual (English)	077-0352-08	Provides in-depth descriptions of how to operate the software. This is a manual version of the product online help. This PDF-only manual is available on the product DVD and on the Web at www.tektronix.com/downloads .
Cerify Software License Notices (English)	001-1513-00	Provides the Cerify Software License Agreement and also the licenses of various third party software used in Cerify. This PDF-only manual is available only on the product DVD.

General notes

New features

This software release includes the following new features:

- Support for audio loudness correction and re-multiplexing of corrected audio
- Complete Dolby E support
- Support for LXF container format
- Enhanced PDF reporting capability
- Timecode analysis for H.264 and DV video
- Analysis of SMPTE302M audio
- Support for analysis of closed caption in H.264 video
- Apple HLS ABR content testing support
- MXF metadata tests
- Addition and improvements of video quality tests

Dongle reprogramming

Dongles used with Cerify v7.1 or older need to be reprogrammed to be used with version 7.2 or above. If such an older version of Cerify is being upgraded to version 7.2 or above, then it is required 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.

NOTE. *All versions after v7.2 require an update of the license dongle prior to being able to use the new version. Please make sure to update your Cerify license dongle before installing v7.5 as your Cerify system will cease to operate on v7.5 with the older license dongle until you get the license dongle updated to v7.5. Also note, all users with a valid Cerify Annual Software Maintenance contract are eligible to receive the base features included in this version without any additional cost. Licensing for the optional Audio Loudness Correction functionality is an additional cost that is not covered by the Cerify Annual Software Maintenance. Please call your Tektronix Sales representative if you wish to add Audio Loudness Correction to your existing Cerify system.*

To obtain the license updates needed by your Cerify system to use this new version, send the c2v file of your Cerify dongle to the following address: cerify-asm@tek.com.

Cerify demo dongles need to be updated to version 7.5 in order to use new features such as audio loudness correction and LXF container support.

Users upgrading from older versions do not need to export and re-import the Cerify database. The upgrade of the database is performed as part of the update install.

Product enhancements

Tektronix is pleased to announce that this release of Cerify v7.5 includes significant additions to Cerify's QC capabilities as well as the first foray into automated correction of content.

New intelligent audio analysis and automated loudness normalization

Two years ago Cerify added Audio Loudness and Peak Audio Level testing/alerting which enabled customers to identify audio content that did not comply with the ATSC A/85 and/or EBU R128 specifications. However, some workflows do not have any audio correction mechanism in place which requires users to route the content flagged with loudness issues by Cerify to other workflows. Additionally these external correction mechanisms add to CapEx & OpEx and increase the time it takes content to get through their workflow. In order to help customers reduce the CapEx, OpEx & time taken associated with their workflows, Tektronix has teamed with Dolby to integrate into Cerify the intelligent audio analysis and automated loudness normalization engine used in the Dolby® DP600 Program Optimizer product.

With this new innovative and efficiency improving feature, users can now elect to configure Cerify to not only identify content with audio loudness and peak audio level issues which would cause it to fail CALM Act and EBU R128 regulation, but can now also use Cerify to automatically rectify these issues while the content is undergoing the QC tests without adding any additional time to their workflows. Since audio loudness normalization is built into Cerify, there is no additional hardware to purchase and maintain, thus reducing OpEx for customers. Additionally, the new audio loudness normalization functionality within Cerify is an option that adds only about ½ the CapEx cost as compared to similar functionalities provided by other products. It is important to note that Cerify will simultaneously normalize all audio tracks contained in a file that are in violation with a single pass of the file, thus providing further workflow efficiency.

The new automated loudness normalization engine supports PCM (RIFF, RF64 and BWF) Dolby AC3 and Dolby-E audio content contained within all containers supported in Cerify.

Additionally, Cerify v7.5 will not only be capable of normalizing audio tracks but can output the correct track(s) either as a separate file or can also reinsert the corrected audio track(s) back into the original file by replacing the original track(s) or adding to them. This functionality will initially only be supported for:

- AC3 audio in TS
- RIFF, RF64, BWF, and Dolby E in AS-02 MXF

New Apple HLS OTT/ABR content supported

Cerify v7.5 is the first version of Cerify to support testing of Adaptive Bit-Rate (ABR) content used to deliver Over-The-Top (OTT) video services. This first phase supports Apple's HTTP Live Streaming (HLS) format, which is estimated to be used in more than 50% of all OTT/ABR services globally. Cerify will now test Apple HLS content to ensure readiness for ABR service.

New audio codecs supported

Cerify v7.5 adds full decode and quality testing support for the following audio types:

- Dolby E
- SMPTE 302M

New container support/extension

In Cerify v7.5, the following changes to Container support have been made:

- Support for LXF container format
- Change to JPEG 2000 template in order to extend support for JPEG2000 files contained in MOV, 3GPP, and MP4 container formats. In such file types, the content processing is done using the decoder distributed with the QuickTime player.

Improved audio/video tests

Cerify v7.5 includes the following improvements to audio/video testing:

- A significantly improved blockiness detection algorithm now detects blockiness artifacts of size $M \times N$ pixels, where M and N are between 4 and 32 and all of the blocks in the frame are of same size
- The PSE test engine has been updated to include support for the following:
 - NAB 2006 (Japan) specification
 - The latest U.K. regulations
 - YUV 444 Planar image format
- A new algorithm that detects when a video frame is missing between any two consecutive frames
- Reintroduction of the Video Cadence test
- Identification of the audio in a TS as either MPEG1 or MPEG2 audio

-
- New ancillary data supported** In Cerify v7.5, support for the following ANC data types has been added:
- Decoding and performing integrity checks of SEI timecode in H.264 video
 - Decoding and performing integrity checks of Main Time Code (MTC) in DV video
 - Analysis of closed caption in H.264 video
 - XDS- Content Advisory tests (support for US-TV Parental Guideline Rating, MPA rating, Canadian English language rating, Canadian French language rating systems) in both MPEG-2 and H.264 video
- MXF metadata analysis** Cerify v7.5 adds identification and analysis of the following MXF metadata information, which helps users ensure MXF container compliance as well as identify vendor equipment causing failures:
- Header partition status
 - Footer partition status
 - Company name
 - Product name
 - Version of the MXF file
 - Last modified date
- New file “QuickCheck” methodology** In Cerify v7.5, the “QuickCheck” test now follows an enhanced test path if the profile does not contain video, audio or container templates. This results in significant speed improvements for such tests aimed at identifying key file structure information.
- Report generation** In Cerify v7.5, the following enhancements to the PDF report generation capability were made:
- Enhanced support for the generation of complete PDF reports including processing results, alert details, and thumbnails. The complete report can now be generated for both jobs as well as files via both the Report page as well as action templates.
 - Support for the inclusion of a custom logo in PDF reports. Users can choose the logo path in the Admin page and that logo will be included in the footer of the generated PDF reports.

Defects fixed

The following defects have been fixed in software version 7.5:

- AVI files took a long time to process.
- Audio and video lengths were reported incorrectly for AVI streams.
- Continuous creation of PDF summary reports using the action template for a drop box job led to a Java Heap Space error after 3 days.
- Cerify was not detecting blockiness in some files where block size was other than 8×8 .
- Some MXF files with JPEG2K video were not getting processed.
- Short term audio loudness minimum and maximum values were incorrect for the audios with more than one channel.
- Only integer values were allowed for the loudness limits.
- If there was total silence (for example, at the beginning or ending), Cerify raised unnecessary alerts for R128 momentary loudness even when the user was not interested in testing momentary loudness.
- Video was not getting detected when processing some MOV files.
- Video was not getting detected when processing a particular MXF stream with MPEG 2 video in it.
- Cross track audio loudness test was not giving correct results.
- While importing templates of pre 7.4 versions, the H.264 and MPEG 2 templates were showing decoder type as "Standard reference decoder", but the files processed with these templates were coming up with "Test not available" information alerts which come up while processing using optimized decoder.
- AS-02 progress update defect.
- ProRes progress update defect.
- Copy file from source to destination through action template not working.
- Optimized decoder giving wrong alerts for f-code and VBV buffer.
- Processing of some files was getting stuck at 99% when multiple audio templates were used.
- Cerify was raising inaccurate "Invalid Field Order Flags" alerts while processing some files.
- CeriTalk WSDL URL displayed \\ when imported in SoapUI.
- MXF clip duration test was incorrectly showing alert even when the clip duration was within the specified limit.

General limitations

This software release has the following general limitations. Please check the Tektronix Web site (www.tek.com/software/downloads) for any updates to the Cerify software.

Audio loudness

- AS-02 related limitation:
 - The track ID of the original MXF AS-02 streams are not preserved in the corrected bundle when the corrected essences are added to the bundle. The track IDs are preserved when the corrected essences replace the original tracks.
- TS related limitations:
 - If the original transport stream contains TS related errors, the Remuxed stream also might contain those errors in certain conditions.
 - Remultiplexing of corrected AC3 streams are supported only for the transport streams with 188 byte packet size.
- Limitations imposed by the Dolby Pro Loudness Correction engine:
 - AC3:
 - Sampling rates supported: 48 kHz
 - Number of channels supported: 1 to 6
 - Audio loudness correction library fails when trying to correct a silent audio stream.
 - WAV(RIFF/ RF64/ BWF) limitations:
 - Sampling rates supported: 32, 44.1, or 48 kHz
 - Bit depth supported: 16, 20, or 24
 - Number of channels supported: 1 to 6
 - Dolby E limitations:
 - Maximum Dolby E frame rate supported: 30 fps
 - Bit depth supported: 16 or 20
 - Must contain Dolby Digital metadata for each program

PSE analysis

- Only the 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
 - YUV 444 Planar
- The data scan order changing from progressive to interlaced is not supported.
- The maximum resolution supported is 1920×1200 and minimum resolution supported is 320×224.
- The supported frame rate range is 20 fps to 60 fps.

Installation

In addition to the guidelines noted in the user manual, the following installation issues should be considered:

- An installation log is written to the "%userprofile%\Cerify\CerifyInstallationLogs_<Timestamp>" folder. This log gives details of selections you made during the install and any errors encountered in case of failure to install.
- When installing on Windows XP64, the DVD auto-launch application may not function correctly. If this happens, navigate to the Exec folder of your DVD drive using Windows explorer and double click the CerifySetUp<version>.exe to start the installation of Cerify.
- If you would like multiple users to be able to run the Cerify application on the PC, make sure you select a location that has read and write permissions for those users as the temporary video folder. A directory located within a user's private directory is not suitable in this case.
- While choosing the location for storing temporary video files during installation, make sure that there is sufficient free space in this folder to store large video files
- On Windows Vista, you may have problems if you install Cerify using one administrator account and try to run Cerify using another administrator account. You will be able to work around this problem by giving that particular user modify, read, write and Execute permissions for the installation folder or by unchecking the setting "Turn User Account Control On or Off" in the case of Windows Vista.

- On Windows Vista, Cerify will not run when started by any other user with administrative privileges other than the user "Administrator" when installed in the default location (program files (x86) in 64 bit systems and program files in 32 bit systems).
- Cerify uses the computer name (as stored in the environment variable named "COMPUTERNAME") to uniquely identify some of its network services. This will not work if non-ASCII characters are used in the computer name.
- Cerify will fail to run if any other Web services using port 80 are running on the system where the Cerify is installed (for example, the IIS Admin service, Skype or Apache). You can run Cerify once you shut down the other port 80 services running on the system. Alternatively, you can configure the Cerify Web port to use a port other than 80.
- It is not possible to install a lower version of Cerify when you have a higher version of Cerify already installed. For example, if you install Cerify version 6.1 and then you want to go back to Cerify version 6.0, you will need to first uninstall Cerify 6.1 and then install Cerify 6.0.

Clustering

- All of the Media Test Units should reside on the same network as the Supervisor unit. It is preferable to configure the nodes with 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.
- If the Supervisor or Media Test Units have more than one network interfaces, it is better to bridge all the network interfaces together.
- Synchronization between all the units in cluster must be maintained. For example, use an NTP server to synchronize the units in a cluster.
- All the units in the cluster should be configured to be in the same time zone.
- If Windows Firewall is switched on in any of the nodes in the cluster, the Firewall may need some additional configurations for the cluster to work. Contact your Tektronix representative for more information on how to set up this configuration.

Network connectivity

- The Cerify software does no particular configuration of any network interfaces - IP address, netmask, DNS, Net BIOS, etc. These should be set using the usual Windows methods.
- For Windows XP machines, loss of network connectivity to the primary NIC - e.g. removal of network cable, switch failure or hibernation of the PC - after the Cerify application has started may cause incorrect behavior. Specifically, management of jobs - creation, deletion, archival and termination - will not have the desired effect. A typical symptom is jobs appearing in the waiting state. When this occurs, it is recommended that the network connectivity is restored and the PC and Cerify application restarted. This problem does not affect Cerify installations on Windows Vista or Server 2008 SE. This problem will also not be exhibited if the machine is not connected to the network when the application is started, it only occurs when network connectivity is lost.

Licensing

- The Cerify 6.0 or later software requires the use of a HASP NetTime dongle. It is not possible to use a HASP Net dongle (as used with Cerify 5.x and earlier) without updating the dongle firmware. Green HASP Max dongles (as used with CerifyLite) are no longer supported.
- When multiple HASP license servers are available on the network, there is a chance that the Cerify unit will try to retrieve its license from a wrong server and fail to obtain the required features, resulting in licensing errors.
- It is possible to insert the HASP license dongle into a different machine from that on which Cerify is installed. This might be desirable if the Cerify hardware does not have a USB port - e.g. blade hardware. Contact your Tektronix representative for more information on how to do this.
- It is possible for the license server to retain handles to license features that were being used by a Cerify machine that has suddenly lost power or otherwise failed. As a result of this the Cerify application will not be able to obtain a license until the license server is restarted. This will only be a problem when the license dongle is not on the Cerify machine, so in this configuration we recommend that the license server machine is restarted when the Cerify application is restarted.
- 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.

- Database**
- It is possible (but unlikely) that a power failure could lead to database corruption. Backup the Cerify database regularly (build this backup operation into your operating procedures).
 - To speed up backup/restoration of large Cerify databases, it is recommended that you use the file:// protocol to backup to/restore from a local folder on the Cerify unit.
 - Due to a limitation of the MySQL database, which limits the size of a single instruction to 1GB, it is possible in rare circumstances that Cerify fails to create a backup of a database when this operation is attempted through the Web UI. Contact Tektronix support if you encounter this issue.
 - The latest database backup file should always be checked for integrity before attempting a product upgrade to ensure that it can be successfully imported into the system after the upgrade. A tool has been provided to do this. From a command shell prompt change to the Cerify installation directory and use the backup checker batch file. For example:

```
C:\Program Files\Tektronix\Cerify> BackupChecker.bat  
file://c:/Temp/backup.sql
```

- Web user interface**
- Windows style paths (E.g. C:\Temp\file.text) are now supported the user interface for creating MediaLocations and MediaSets. However, they should not be used in Action Templates, where it is still necessary to use file:// style file names.
 - Altering the URL or user credentials of a MediaLocation that is being used by one or more MediaSets may cause inconsistent behavior in the Web user interface. If this occurs, create a new MediaLocation and recreate the MediaSets that were using the old MediaLocation. Changing the properties of a MediaLocation that is not yet being used by any MediaSets does not cause any problems.
 - When setting up Grass Valley MediaLocations, you must specify the username and password to use to access the Grass Valley server. The system no longer assumes the username "movie" when these fields are left blank.
 - When jobs are restored from being archived they will always have a stopped status. This avoids the restored job cause unexpected processing if the relevant MediaSet has had media files added since the job was archived; this would cause a previously complete job to resume processing. You can restart stopped jobs using the Resume action in the drop-down menu at the bottom of the jobs monitor page.
 - The use of "<", "?", "&", "#", "%", "+" and "\" characters within media file name (or name of the folder containing the media file) will prevent the media file from being added to a MediaSet. If this occurs, rename the file (or folder).
 - The Web user interface has been tested using Microsoft Internet Explorer versions 7 and above and Mozilla Firefox 3.0 and above.

- Firefox 1.5 and 2.0 have a known defect which can sometimes result in incorrect layout of template pages. This does not affect the behavior of Cerify.
- When creating a MediaSet, the Web user interface file browser will respond slowly if the directory being listed contains many thousands of sub directories. This situation is typical when using Pinnacle servers. During this period, the Web browser will show the message Please Wait. However, in some situations the Web browser will also display a warning dialog message indicating that the page's JavaScript is responding slowly. The message may be safely ignored and the script should be allowed to continue to completion.
- You can use action templates to copy and delete single media files after they have completed processing. For video servers that store assets using directories (for example, Pinnacle servers), or referenced formats (for example, Omneon Quick Time files), it is not possible to copy or delete the entire media clip asset with this mechanism.
- Not all files that Cerify is able to process can be played back using VLC. More details can be found in the "Enabling VLC playback" section of the user manual.
- When VLC is being used to playback media files, the client PC (that is, the PC being used to view the Web user interface and playback the files) accesses the media files using the same media file URL that Cerify uses. This has the following implications:
 - For SMB/CIFS access, the shared folder must previously have been mapped on the client PC. This is a Windows limitation.
 - Only standard FTP servers can be accessed. This excludes some video servers, such as Omneon. This is a limitation of the FTP client within VLC
 - Remote VLC players are unable to playback files that were originally processed using the file:// protocol. A VLC installation on the same PC that Cerify is installed on will be able to playback files processed using the file:// protocol.
- Playing back using VLC player does not work correctly if versions previous to 1.1.5 of VLC player is used.
- Files cannot be added to a MediaSet if full filename and path total more than 250 characters.
- When processing multiple files whose names are identical, even though their paths may be different (e.g. from Pinnacle servers where all assets are named 'std' and are stored in folders named after an ID), using the copy action in the action template will result in files being copied over the previous one with the same name at the target location.
- UNC notation is not supported in MediaLocation URLs. For example, paths of the form \\machinename\dir are not considered valid.

Media processing

- Some video servers (e.g. Omneon) put a lead-in at the start of a stream with a different VBV buffer size to the rest of the content in the stream. Cerify always reports the first VBV buffer size it encounters, making it possible for the reported buffer size to not match the expected value for the stream.
- Some AVC streams do not indicate a video frame rate. For these streams a frame rate check, if selected in the video template, will fail. Video template tests that can be checked over a user-specified length of time (e.g. black frame or blockiness checks) will calculate the length of time to check based upon the $\langle \text{number of frames} \rangle / 25$; i.e. a frame rate of 25 frames per seconds is assumed. If this assumption is not correct the user should specify the length of check based upon number of frames rather than length of time.
- Cerify does not support in-stream changing of frame size. Cerify will terminate processing of a file if the frame size changes.
- Audio streams with varying sample rates/SBR information are not supported.
- The system template "Omneon QT" can be used to process any type of file that adheres to the Apple Quick Time format containing atoms supported by Cerify (refer to Appendix B of the user manual for details). This includes files that have interleaved essence and those that refer to external essence files.
- VC-1 streams that do not contain a header at the start of the file will not be decoded correctly.
- When processing media files, you can limit the number of alerts so that processing will terminate after the limit is reached. In this situation, the reported length of stream - and any derived stream properties, for example, bit rate - will be calculated on the basis of the length of stream actually processed, and not the complete stream. Also, checks that depend on the end of stream being found such as a check for black frames at the end of the stream will not be carried out. An alert is raised that warns the user of this fact.
- The file size of referenced / non-embedded wrapper formats (such as some Quick Time and MXF files) is reported as just the size of the wrapper file and not the sum of all the referenced files. Care should be taken when using stream properties or checks (e.g. bit rate) for the system template. Stream properties and checks for referenced audio or video content can still be reliably used.
- The detection of poster frames and the execution of black frame tests are only supported for 8-bit video.
- When running black frame tests and silence tests, there may be a conflict if "test during video" and "test at end" checks are used in combination. If the former is set to check black frames during video, while the latter test requires black frames at the end of the video, an alert will erroneously be raised during the end period due to the former check. No alerts are missed so this behavior is still fail-safe.
- Detection of audio test tones during video is not supported. Detection of test tones at start and end of media playback is supported.

- Test coverage of the MPEG-4 main profile video codec is limited.
- When the Loss of Chroma or Pillar-box tests are set-up to ignore more than two seconds at the end of the stream, it is possible for the system to raise an alert without a video/audio thumbnail associated with it. The alert itself is legitimate and should be considered valid.
- In some cases, video servers do not report up front a size for the file being transferred to Cerify for testing. In such cases, 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 file-end to have been reached and accordingly moves the progress percentage from 0% to 100%. This is typically seen when processing files from video servers like Grass Valley servers that dynamically create the file for processing on request and with servers like Nexio that maintain a virtual file system.
- Apple ProRes and Generic QuickTime Video decoding functionality are not available on Windows XP 64 bit and Windows Server 2003 64 bit as the QuickTime Player is not supported on these platforms.
- After installing QuickTime Player, it is recommended to restart the system before running Cerify.
- Automatic reprocessing of files within a DropBox may not work as expected, if the video server does not supply the file properties like file size and last modified time correctly.
- Automatic reprocessing of files is not supported for DropBox created using GVG protocol.
- Automatic reprocessing of files based on file size will not work correctly if `vqual.io.ftp.filesizeunknown` property is set to true in `cerify.properties`.