Image Integrity

Methods for securing the integrity of recorded, secured
and displayed images

English

See more than others.

Dallmeier

1   Abstract

The recordings of a **Dallmeier video security system** can be used for evaluation, preservation of evidence and evidence of an incident. This is made possible by various measures and methods that prevent manipulations during recording or securing and that indicate manipulations during playback.

These measures and methods normally allow a **certification** of the recording systems by **LGC Forensics** (formerly Kalagate Imagery Bureau) and with it the **applicability of the recordings in court**. At the time of the document compilation this certificate has already been issued for various recording systems (see Certifications and Product Information in the Dallmeier Partner Forum).

This document contains a general description of the methods for securing the integrity of the recorded, secured and displayed images.

2   Validity

This document applies to the following recording systems. It has been created on basis of version 8.x.3 of the integrated software SMAVIA Recording Server.

IPS 10000	IPS 2400 II	DMS 2400 II	VideoNetBox II
	IPS 2400	DMS 2400	

This document applies to the video management software SMAVIA Viewing Client as well. It has been created on basis of version 2.2.0.23.

3   Recording Systems

All Dallmeier products are designed and produced with regard to a maximum system security and system integrity. Especially the following measures and methods prevent a manipulation of the images stored on the various recording systems.

Secure operating system

Dallmeier recording systems are equipped with a highly adjusted and hardened Linux operating system. Compared to other operating systems, this provides significantly enhanced security in case of attacks and higher system stability.

Integrated software modules and services

Only absolutely necessary software modules are integrated into Dallmeier recording systems. The recording system's user interface does not offer any function that would allow any manipulation of the recorded images.

No software installation

Dallmeier recording systems do not offer any possibility to start or install software from a connected medium. Also, the start from a connected or integrated drive is prevented by default through an appropriate configuration of the password protected BIOS.

File system

Dallmeier recording systems use a proprietary method of data storage. They do not use a common file system, because the access on file level is not intended. The various image component are separated and written to the hard drive as decentralized raw data.

As a result, the data of an image can not be recognised and manipulated with a software.

This is the case, even if the hard drive is removed or copied.

4 Backup

Recordings are always transformed into a proprietary file format when they are saved to an external medium (storage on CD-ROM) directly on the recording system. This transformation is made as well if the backup is made via network with the SMAVIA Viewing Client software (storage on workstation).

The proprietary Dallmeier MOV format basically represents the sophisticated and proprietary file system of the recording system (see above). The various image components are separated and saved in the file as separate data clusters. As a result, the data of an image can not be recognised and manipulated with a software.

In addition, a checksum is calculated for every component of the single images. It is saved in the same file but separated from the image data. The checksum allows the identification of every manipulated image during playback with the SMAVIA Viewing Client software.

5 Evaluation

The Dallmeier video management software SMAVIA Viewing Client designed for the secure evaluation of the live, recorded and the backed up images. Furthermore, it is able to detect and indicate manipulated or defective images during playback.

During playback of files in the proprietary Dallmeier MOV format, SMAVIA Viewing Client consolidates the various components of the images. In doing so, the software analyses and validates the check sums of each component of the single images. A manipulation is indicated with an overlay on the user interface for every single image. This indicator is integrated into the image if it is printed or saved again with SMAVIA Viewing Client (backup of the backup).

The SMAVIA Viewing Client software allows minor modifications of the images (e. g. brightness, saturation, contrast). These changes are also considered as a manipulation of the image. A corresponding indicator is displayed during playback and integrated if the image is printed or saved again with SMAVIA Viewing Client.

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