Digital Delivery of DCPs - Informational Overview

Overview

This document covers methods that can be used to transport Digital Cinema Packages (DCPs) between physical locations in addition to hard disk transfer (which has been detailed in the document **ISDCF Document 3 - Hard Disc Drive formats**.)

The target audience of this document includes those who need to distribute DCPs between physical locations predominantly being content creators, distributors, film festivals, and exhibitors (between facilities). The document is a high-level overview of the topics discussed. If a more technical or detailed understanding is required, the reader is expected to contact suitable industry experts.

DCP Encryption

The SMPTE standards that DCPs are based on implement very secure encryption. If a DCP is properly encrypted, that DCP is safe from any foreseeable form of piracy. In order to play, this properly formed DCP must be paired with a properly created KDM which targets a known and trusted media player and projector pair. This will also result in picture and audio watermarking of the playback to indicate exactly where and when this playback took place.

The loss or interception of an encrypted DCP does not pose any risk of content piracy.

It is highly advised that the use of encryption is used as any non-encrypted DCP does open the content to duplication and piracy.

Business requirements

Even though an encrypted DCP is secure, business requirements may be in place to restrict how data can be copied and transported. This document is not meant to negate the rules set down in any distribution business relationship.

Data integrity

DCPs files/data can be moved between locations by many different methods, just as any computer file can. This includes but is not limited to portable drives, satellite, SFTP, FTP or other IT protocols. As long as data integrity is maintained – that is, the files are not changed in any way – any data integrity issue(s) will be flagged and logged by the Theatre Management System (TMS) or Media Player. Typically, there will also be a mechanism to repair or resend the missing portions of the files.

The document ''ISDCF Document 3 - Hard Disc Drive formats" gives a detailed description of how hard drives and USB external devices should be formatted for physical distribution to ensure that they are readable by all DCI certified equipment. Physical delivery is a more complicated case that needs to take various file system limitations into account.

Common physical delivery methods

The industry initially standardized on "CRU-Dataport" sleds initially for physical delivery as at that time, large 3.5inch hard drives were the only storage devices big and fast enough for convenient file exchange. These are still in wide use today.

In recent years the use of USB 3 portable hard drives have become common as they can be faster, cheaper and smaller than CRU-sleds.

It is expected that eventually USB-stick devices (similar to what Trailers are supplied on) will be large enough for a DCP. Prices are also expected to drop to reasonable levels. Eventually the industry will move away from CRU sleds and transition to USB 3.1 and/or USB-C type storage devices.

Digital Delivery and transfers

As established, a DCP is a set of files that need to be "copied" from one place to another. This opens up a wide range of potential services. Any service that can copy a file can potentially be used, and some services can be judged more or less appropriate based upon client needs. If an entity plans to utilise any method to copy/move a DCP, it should be rigorously tested before it becomes relied upon.

It is highly advised that when moving a DCP over *any delivery method* that encryption is utilized to ensure that unintended leaking of content cannot occur. (Note: Interop DCPs captions and/or subtitles tracks are not able to be encrypted and are therefore less "secure" than SMPTE DCPs.)

Common use cases for digital delivery and transfers

The following describes common methods and considerations for various methods of "digital" delivery. This may help the reader understand how they can be utilised to save costs or implement innovative new processes.

1. Satellite: This implementation typically involves a managed device that captures the data from the satellite and pushes it into the TMS when delivered. It must be noted that satellite delivery relies upon a high density of locations under a single satellite to be viable. As such, this method is limited to certain regions of the world and is under pressure from general internet connectivity as it gets faster and cheaper.

2. Internet Delivery Platforms: Service providers have created content delivery platforms for delivering DCPs to locations with typically 50 Mbit/s or better internet connections. This can involve a managed device at a location that downloads in the background slowly, or simply direct download from a website or service.

3. Direct distributor to exhibitor internet download: This is especially common for film festivals or DCPs that are not in wide release but only to a limited distribution. Content owners set up a download site in which they then give the download instructions to locations when required.

4. Exhibitor site to site copy: Many larger exhibitors are setting up secure networks between sites. This makes it commonplace for them to request one physical delivery of a DCP and then to copy it out to all locations negating the need for courier costs and staff to receive, ingest content. This can all be done by one staff member and is faster, more reliable and saves costs.

5. Exhibitor site to site recovery: If a problem does occur at one site, data can be quickly pulled from another to rectify any corrupted data.

Implementation considerations

How the above services are implemented are not covered in this document. Each method above can be implemented via numerous techniques, tools and services, including open source solutions. It is expected that those wishing to take advantage of these methods of DCP distribution consult with suitable Information technology (IT) consultants.

To prepare for digital delivery of DCPs, it is recommended that the following considerations be investigated:

- Upgrade to a 50 Mbit/s or better internet connection. (100 Mbit/s would be more effective and required if you receive/send a large number of DCPs a week)

- The internet link be unlimited or have enough data download quote for 500 GB (gigabytes) per film you would receive/send over the billing period.

- Contention issues be investigated to ensure the link can actually achieved the bandwidth to the services receiving/supplying the DCP. (i.e. contention is how much you are sharing your link with other people, and if oversubscribed, you may not be able to achieve the prescribed bandwidth of the service provider the DCP is being received/sent to. Please contact a consultant for more details.) You may be required to upgrade to a higher cost service to reduce contention.