

### **Digital Cinema Distribution Master - DCDM**

The DCDM is made using the original finished picture data of the feature film from the DI process (normally 10 bit log DPX files). To create the DCDM the respective data is encoded into 12-bit or 16-bit Tiff files for picture (applying either a Film-Print LUT, or colour space transform from your delivery format into CAP X'Y'Z' colour space) and 24-bit WAV files for audio.

The DCDM is not able to operate as a distribution master for exhibitors but provides the uncompressed master elements enabling creation of the DCP OV.

In film terms the comparable elements to a DCDM are the original picture neg. and separate audio track neg.

### **Digital Cinema Package (Original Version) – DCP OV**

The DCP OV is the actual distribution master for Digital Cinema exhibiting. The process here is to encode the DCDM files as 12-bit JPEG 2000 image files, and MXF wrap and encrypt them as individual reels of image and sound to create the Digital Cinema Package. This may include textless elements, ensuring multi version and language deliverables are all available. The DCP OV can then be manipulated to create the required different versions, including foreign language versions with different logos and certification cards, foreign language text elements, subtitles and foreign language audio dubs. Because each sound and image reel is encrypted separately, it is not possible to decrypt the entire feature without the key for each element.

In film terms the comparable element would be the Inter Negative.

### **Digital Cinema Package (DCP) - DC clones**

The DCP is the equivalent of a 35mm film print, essentially a clone of the DCP version required. In effect a "Digital Print".

The data is built in a similar way to a 35mm print using similar sized reels. Each reel contains 1 picture file, 1 audio file and (if required) 1 subtitle file.

The amount of data is approximately 200Gb for a complete feature film.

The reels are compiled together using a Composition Play list (CPL). This is a small XML file with details of all elements in the DCP.

The CPL controls start/end points, reel changes, audio sync and subtitle display.

The theatre will copy the DCP data from the USB drive onto their server, however, the playlist will appear and be encrypted but will not work.

The theatre will subsequently ingest a KDM (Key Delivery Message), delivered electronically or on USB stick.

### **Key Delivery Message - DC clones**

The **KDM** delivers security parameters and usage rights between distributors and exhibitors.

The KDM is generated by Deluxe Digital London.

Each KDM is unique and will allow ONLY the specific DCP to play on a specific theatre playback server for a specific period of time only.

When the KD has expired the DCP will not play in any location and is completely secure.

The encryption level is equivalent to that used by The Bank of England....so if you can hack a DCP you may as well hack the bank...!

The KDM contains the decryption key for each encrypted image and sound reel – for example, a 6-reel feature has 12 keys. These keys are themselves encrypted, and contained within a single Key Delivery Message, which is targeted at an individual replay device. The KDM cannot be used to decrypt content on any other device, and is limited to a pre-determined start and finish time and date. The content may not be decrypted and replayed outside this window.