# codex

TECHNICAL BULLETIN

## OFFLOADING FILES ON CODEX SYSTEMS

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# 1     Offloading files on Codex Systems

## 1.1    Introduction

This guide covers the different ways in which files can be offloaded using the Codex Transfer Station for Mac OS X and Digital Lab systems. The Codex software automates the offload process to make verified backups. This is distinct to copying files from the Codex Virtual File System (VFS) using a third party copying tool or drag-and-drop copy method.

There are three different offloading methods that will be discussed – LTFS (Linear Tape File System), TAR (Tape ARchive), and Disk offloading. The Codex Transfer Station for Mac OS X supports LTFS and Disk offloading, while Digital Lab systems support all three offloading methods.

Offloading can be done to LTFS and Disk at the same time – up to two LTFS and two Disk backups can be made simultaneously (files are written in sync and therefore the speed is governed by the slowest device). TAR offloads on a Digital Lab can be done to a maximum of two LTO tapes.

Some sections of the guide, such as checks to do before and after an offload, are relevant to all types of offload.

If offloading to LTO tape it is highly recommended to use tapes with barcode labels as these can simplify the offload process and the cataloguing and organisation of a tape archive.

Further documentation on Codex systems can be found at www.codexdigital.com/support. For support enquiries email support@codexdigital.com

## 1.2    Software installation

This guide is applicable to software version 2012.r1.2105.

The latest Codex software versions and installation instructions are available from www.codexdigital.com/software. Support for all types of offloading is built into the standard installers.

The matching Codex UI software also needs to be installed if using a Transfer Station for Mac or controlling a Digital Lab from a networked computer.

## 1.3    How the VFS is used

All offloading methods transfer files from the Codex VFS to either tape or disk media. The Codex VFS is the part of the Codex software that makes captured material available as different file types for post-production. For more information refer to the VFS Guide available from www.codexdigital.com/support

There are presets in the VFS that are recommended for use when offloading material, and these are discussed later in this guide.

## 1.4    LTFS offload basics

LTFS is an open standard format for writing data to digital tape, such as LTO. When formatted as LTFS a tape appears to an operating system like attached hard-drive storage, and the directory structure can be browsed through. Tapes formatted as LTFS can be appended to, but an offload cannot span multiple tapes. Once a tape has been formatted as LTFS it cannot be used for an alternate type of offload, such as TAR.

## 1.5    TAR offload basics

TAR is another open standard for writing data to digital tape. Files are written to tape in TAR chunks, of around 500 files (frames), with the chunks being divided by Filemarks – these can be thought of like chapters in a book. If you want to retrieve files the relevant Filemark can be navigated to and then the whole TAR chunk is unarchived. TAR offloads cannot be appended to, but can span multiple tapes. Tapes do not have to be formatted prior to use for a TAR offload, and can later be reformatted for another type of offload, such as LTFS.

## 1.6    Disk offload basics

Disk offload copies files from the Codex VFS to any other disk volume that is available on the system. It can perform a simple Backup, and can also perform a Verify process on the copied files.

## 1.7    Recommended VFS settings for offloading

The Codex software comes with two VFS Configuration presets that are suitable for offloading:

Codex Tape Offloading (preset)
Codex Multi-Channel Tape Offloading (preset)

The Codex Tape Offloading preset can be used for offloading single camera shots, whilst the Codex Multi-Channel Tape Offloading preset can be used for offloading shots with 2 video channels from either stereo 3D or A+B camera shots on the Codex Onboard recorder.

**Important Notes:** it is common to set all file types in the VFS to be at the project frame rate (e.g. 24fps). The preset VFS configurations above cannot be edited in this way, but they can be copied using COPY CONFIG and then edited appropriately, as described in the VFS Guide.

These presets MUST be used if you want to successfully import the material back using Codex software at a later date – the software will warn you of this before you start an offload if a different configuration is selected.

If Codex software will not subsequently be used to import files then a different VFS Configuration can be used.

# 2    Checks before an offload

The offload process operates on the Codex VFS, not at a per Datapack level. When you load a Datapack the shots are shown as files in the VFS according to your VFS setup. The directory structure may be influenced by metadata in the shots, including Scene, Take, Roll etc.

One possible situation is having more than one Roll loaded on the system (even potentially on a single Datapack). This would not be obvious viewing shot tiles in the Codex UI or on the STORAGE tab, but could be seen by looking at the files in the VFS.

It is also possible to restrict which shots are presented in the VFS by using the Filter options – for example you could filter the VFS to only contain shots from a certain Roll or Date. If for any reason there are shots on the system that don't match the Filter conditions, either intentionally or by accident, you may incorrectly assume all the intended material has been archived when in fact only a part of it has.

The only way to guard against this kind of error is to visually check the VFS against your expected shot list, before starting the offload.  In any event, this is a good opportunity to run through the metadata for each shot to check it is correct and that you have all the shots you expect.

## 2.1    During an offload

When an offload is in progress the Codex UI is locked, and trying to navigate to a different part of the UI will bring up a box informing you that doing this will cancel the offload process. This is to prevent changes to shot metadata which will alter the contents of the VFS, and changes to the VFS setup itself.

Also, when doing an LTFS offload it is not advisable to browse the file system on the tape using Finder as this will slow down the offload process significantly.

## 2.2    Setting up for an offload

From the SETUP tab select the OFFLOAD screen. On Mac the OFFLOAD screen has one tab, which is for both LTFS and Disk offloading. On a Digital Lab there are two tabs – Disk/LTFS and TAR – and you should select the correct tab for the type of offload you are doing.

For Disk/LTFS offloading, click the OPTIONS button to open the Offload Options box. Here you can specify the number of LTFS and Disk offloads that will be performed simultaneously.

With 'Num Disk offloads:' set to 2 there is a 'Disk offload 1:' and 'Disk offload 2:' option, and you can click the folder icon to open a file browser and select the destination directory for each Disk offload. When setting the destination click the drop-down arrow for 'Drive:' to view a list of external volumes mounted on the system.

After setting up the offload destinations as required, click the MOUNT button. In the Devices field it should now show the destination(s) for the offload. For example, doing a single Disk/LTFS offload on Mac this could be '/Volumes/ltfs;/Volumes/MyDrive', or doing a TAR offload on a Digital Lab this would be nst0 and nst1 (the tape drive device names).

For the type of Operation there is a choice of Backup, Verify, or Backup+Verify (for TAR offloads if the system is setup up to make two copies then the option is Dupe Backup+Verify).

The Backup option copies files from the Codex VFS but performs no checking after the copy process.

For LTFS/Disk offloads the Backup+Verify option copies the files and then does a byte-for-byte verification by comparing what is on the destination tape/disk to what is in the VFS.

For TAR offloads the Backup+Verify option copies the files and then does a checksum-based verification, and also in the case of a duplicate offload compares the checksums of the two copies to ensure they are the same.

If Backup is used then the Verify option can be used later, and this compares what is on the destination tape/disk with md5 checksums that were created during the backup and reflect what was read from the VFS. These md5 checksums are stored on the system disk of the machine used for offload – therefore the Verify must be done on that machine.

The Mode must be set to Manual to START an OFFLOAD. Do not use Automatic mode.

The VFS Directory field is normally left blank, meaning that all files in the VFS will be included in the offload. This field can be used to select a sub-directory of the VFS for the offload, but it is more common to control the contents of the VFS through the use of filters. See the VFS Guide for more details.

# 3     LTFS offloading

## 3.1     Compatibility

Running an LTFS offload requires a Quantum LTO-5 drive running firmware V3082 or greater and an LTO-5 tape.

LTFS support is needed on any machine that is required to later read tapes containing LTFS offload material.

## 3.2     Licencing

A licence is required for the Disk/LTFS offload functionality on Codex software for Mac. If you require a licence contact support@codexdigital.com with your System Key, which can be found in the Codex UI by going to the SETUP tab and clicking the *i* icon in the lower-right corner.

## 3.3     Running an LTFS offload

When you START an offload you will be asked to name it. By default it will be called 'unnamed', but commonly this would be changed to reflect a key element of the material that is being offloaded, such as the Roll or Shoot Day.

If it is the first time the tape has been used for an LTFS offload then once you start the offload process you will be asked to input a name for the tape (normally the barcode number) and it will be formatted, which takes around two minutes. The system will then commence copying files to the tape, and the UI will display the files that are being written and also the approximate time remaining until the offload is complete.

## 3.4     Checks after an LTFS offload

When an offload is complete you can use Finder to view the Files on the tape, and copy some sample files back to the computer to perform a visual verification.

Alternatively the MAIN tab->Tools->IMPORT feature of the Codex UI can be used to view a list of the shots on the tape and additionally import material back onto a Datapack. There must be a Datapack loaded to import to, and this must be set as the Recording Target on the SETUP tab->FORMAT screen.

Set the Import Source as Tape and the Import Selection as Manual. The Num Frames field can be used to set a number of frames per selected shot to import – if this is left blank then whole shots will be imported.

Click DO IT and the software will ask you to select an offload (the tape may contain multiple offloads). Once you have selected an offload the tape index will be read and a list of the shots in that offload presented, which can be used for checking against.

To import, in the list of shots click the box next to a given shot so it is highlighted green. To be thorough you can select a shot at the beginning, one near the middle, and one at the end. This is where the Num Frames field can be useful – for example by setting this to 24 the software would import the first 24 frames of each selected shot. Then click the Import Selected button.

Once the files have been imported they will be visible as shots in the Codex UI and can be accessed through the VFS, for example as 10-bit RGB DPX, for visual checking.

It is then highly recommended to back up the offload log files as discussed in the later section "Offload logs files".

The Codex software controls all processes related to the drive when it is mounted. Therefore to eject the tape you must use the EJECT button at the bottom of the MAIN tab->IMPORT screen.

The write-protect tab on the tape should be used once a tape is finished with to prevent accidental deletion.

## 3.5     Adding an offload to an LTFS tape

The LTFS format allows multiple offloads to be made to a single tape, though offloads cannot span tapes.
If you start an offload with a tape that has already been used for an offload the software will inform you that the tape is not empty. You then have the choice to Reformat, Continue As Is, or Cancel.

To use the tape select Continue As Is and then proceed as normal.

The Reformat option will clear all data on the tape, and therefore should be used with caution. If the write-protect tab on a tape is engaged then reformatting or adding to a tape is not possible.

# 4     TAR offloading

## 4.1     System configuration

Digital Lab systems are configured with two LTO5 tape drives and can produce duplicate verified back ups.
They can also be configured to use only one of the drives for single back ups, or to use external tape drives – refer to the Appendix "Changing the Digital Lab tape drive configuration" for details.

## 4.2    Running a TAR offload

Once everything is set up and you have done the pre-offload checks, running an offload is very straightforward.

When you START an offload the software will ask which type of LTO tape will be used – this is to calculate how many tapes will be required. Then follow the prompts to enter the tape names to be used in each drive, which would normally match the barcode labels.

It is very important that the tapes are inserted in the correct drives for accurate logging of the offload. The left-hand drive is nst0 and the right-hand drive is nst1. (If the system is set up for an external tape machine that can scan barcodes all this happens automatically.)

The system will then commence copying files to the tape, and the UI will display the files that are being written and also the approximate time remaining until the offload is complete. If the offload will span tapes then the time remaining displayed will be for the current tape.

For the in-built drives, if the offload will span tapes then someone needs to be present to change the tapes. If no-one is present the software will simply wait until another tape is inserted and then continue with the offload.

## 4.3    Checks after a TAR offload

Refer to the section "Checks after an LTFS offload", which contains details of the recommended checking procedure.

# 5    Disk offloading

### 5.1    Running a Disk Offload

The Disk offloader should be used in Manual mode.

With the system configured press MOUNT and the Device field will reflect what has been set up in the offloader.conf file – e.g. /Volumes/MyDrive.

When you START an offload you will be asked to name it. By default it will be called 'unnamed', but commonly this would be changed to reflect a key element of the material that is being offloaded, such as the Roll or Shoot Day.

You will then be asked to name the offload target. This information is stored in the logs for the offload and can be used later to track the location of files from an offload.

The system will then commence copying files to the drive, and the UI will display the files that are being written and also the approximate time remaining until the offload is complete.

Before switching off or disconnecting the drive, make sure the process has finished or use STOP to stop it. Then un-mount the drive – on a Digital Lab this is done either from the command line if it is a USB/eSATA drive or networked server, or using the UNMOUNT button if it is a Fibre Channel RAID.

### 5.2    Checks after a Disk offload

When an offload is complete you can use Finder to view the Files on the tape, and copy some sample files back to the computer to perform a visual verification.

Alternatively the MAIN tab->Tools->IMPORT feature can be used to import material back onto a Datapack. There must be a Datapack loaded to import to, and this must be set as the Recording Target on the SETUP tab->FORMAT screen.

Set the Import Source to File. The Num Frames field can be used to set a number of frames per selected shot to import – if this is left blank then whole shots will be imported.

Use the File Browser to set the Filepath as the offload.toc file for the specific offload. The File Browser icon appears like this:



Select DO IT and a list of shots in the offload will be displayed.

To import, in the list of shots click the box next to a given shot so it is highlighted green. To be thorough you can select a shot at the beginning, one near the middle, and one at the end. This is where the Num Frames field can be useful – for example by setting this to 24 the software would import the first 24 frames of each selected shot. Then click the Import Selected button.

Once the files have been imported they will be visible as shots in the Codex UI and can be accessed through the VFS, for example as 10-bit RGB DPX, for visual checking.

It is then highly recommended to back up the offload log files as discussed in the later section "Offload logs files".

# 6     Offload log files

The Codex software stores log files for all offloads. Depending on the platform being used and the type of offload these are stored in different locations, which are discussed below.

On a Mac both LTFS and Disk offload logs are stored in the following directory on the system drive:

/Library/Application Support/Logs/offloader/

On a Digital Lab system the LTFS and Disk offload logs are stored in the /etc/codex/offloads directory and the TAR offload logs in /etc/codex/tape-offloads, both accessible locally and through the /codexsettings network share. See the separate guide "Getting Logs and loading LUTS/Burn-ins/sysconfigs" for more details on accessing network shares.

Each LTFS/Disk offload directory is named in the format offload_<Date>_<Time>-<Name> so there can never be two folders with the same name. Inside each directory is a file called offload.toc that is a Table Of Contents file for the offload. There is also a file of md5 checksums that are used if a separate Verify is done for an offload.

Each TAR offload directory is numbered automatically by the system (e.g. tape-archive-1, tape-archive-2, etc.) and contains a directory for each tape drive used, i.e. nst0 and nst1. Within these directories is a Table Of Contents file for the archive, md5 checksum files, and progress logs.

When using certain features in the Codex software, such as importing based on EDL, the software scans these TOC files in order to determine where the material is stored and will instruct the user to load the relevant tape.

They can also be used by post houses who may choose to write their own tools to use the TOC files as a reference database for offloads.

For these reasons it is highly recommended to make a back-up of the files after each offload, and to hand them to a post house along with the LTO tapes.

# 7     Re-importing from an Offload

When an offload is complete the MAIN tab->Tools->IMPORT feature can be used to view a list of the shots on the tape and additionally import material back onto a Datapack. There must be a Datapack loaded to import to, and this must be set as the Recording Target on the SETUP tab->FORMAT screen.

This can either be used to import files from an offload based on an EDL, or to import a sample from an offload as a visual check after an archive is complete. The import process is covered in the sections "Checks after an LTFS offload" and "Checks after a Disk offload".

Setting Import Selection as Via EDL the user is presented with an EDL Filepath box and can use the File Browser to select an EDL file. The File Browser icon appears like this:



In this case the system will import all the shots that are specified in the EDL from the tape.  If the EDL specifies shots that are split across multiple tapes the software will sort through the list, request each tape in turn, and import all required shots from that tape before moving on to the next.

**Note:** the software only supports CMX3600 pull list style EDLs, and the target Datapack must have enough space for all the shots in the EDL.

Within the OPTIONS for importing it is advised to set Conversion to Keep Existing Format.

# 8   APPENDIX

## 8.1   Using an alternative VFS Configuration

As discussed, the preset Tape Offloading and Multi-Channel Tape Offloading VFS configurations ensure that files in an offload can be imported successfully using the Codex software.

Use of a different VFS configuration is likely to prevent successful importing using the Codex software. Disk and LTFS offloads can easily be read in other software. There are also other options for reading TAR tapes - see the Appendix "Command line scripts for unarchiving TAR offloads".

Contact support@codexdigital.com if you would like to discuss different configurations and whether these will allow for the importing of files from tape using the Codex software.

## 8.2   Format of LTFS/Disk offloads

When files are archived to LTFS tape or Disk they are in the same format and directory structure as the files in the VFS. The only addition is the file offload.toc, which is added in the root directory of that offload on the tape/disk, and contains details and a Table Of Contents for the offload.

## 8.3   Changing the TAR tape drive configuration

The /etc/codex/tape_offloader.conf file can be edited to change the tape drives that are used by the a Digital Lab for TAR offloads. By default there is the line:

```
active_drive_mask  3
```

This is a bit-mask, so the value 3 means that the first two drives will be used. To use only the first internal drive change this value to 1. The internal tape drives can be disabled in order to use external drives on the system – contact Codex support if this is required.

If using two external tape drives it is important that they are cabled (mapped) in the correct order.

The process to ensure that the drives are connected correctly is as follows:

1. Connect the machines and switch on the LTO machine first. Wait until it has finished initializing, which may take several minutes, before switching on the Digital Lab.

2. From the command prompt on the Digital Lab enter:

```
mtx status
```

This will report whether the various drives and slots have any tapes loaded.

3. If the first drive does not already contain a tape then load one (this should be a new/rewound tape). This can be done from a front slot on some LTO machines using the machine's menu options. Alternatively, after running the mtx status command you will know which slots contain tapes and can run a mtx load <source> <destination> command. For example, if slot 6 contained a tape you would type mtx load 6 0 to load the tape from slot 6 into the first drive.

4. If the second drive is not empty you will need to eject the loaded tape. Again, you may be able to do this from the machine's menu. If not, type mtx unload <destination> <source>.

5. Now that the status of the drives has been confirmed, to make sure the drives within the LTO machine are mapped correctly to the Digital Lab, enter:

```
mt –f /dev/nst0
```

This will display the status of the first drive, and should contain the information 'BOT ONLINE' (Beginning Of Tape ONLINE).

6. To double check that the second drive is mapped correctly enter mt -f /dev/nst1, and the output should contain 'ONLINE IM_REP_EN'.

7. If the drives are mapped the wrong way round then swap the cables, shutdown, and restart the system.

## 8.4   Format of TAR tape offloads

The TOC files contained within the tape-offload log folders are also written as the first file on each tape. The rest of the tape then consists of a repeating sequence of Filemarks and the actual files themselves. All files written to tape are wrapped in a tar file, which have a 256KB blocksize.

Some files, e.g. ari/dpx, are bundled together into larger tar files in order to keep the tape running as near its maximum speed as possible. For image files like ari/dpx there is commonly around 500 frames in one tar file.

The Filemarks can be thought of like chapters in a book, allowing systems to shuttle through to a given Filemark and then unarchive the tar files required without having to unarchive everything.

When the files are archived to the tape, the full path from the VFS is maintained, e.g.

055/dpx/055.128_524_1.ce830679-2108-4a51-88da-8da12c631479/128_524_1.1213915.dpx
The recommended VFS Configuration uses the following format:
\<rollname\>/\<filetype\>/\<rollname\>.\<shotname\>.\<unique-shotid\>/\<shotname\>.\<frames since midnight\>.\<extension\>

Using this format means:

1. If we search all of the TOC files we can find where all files for a particular roll or shot are,

2. When unarchived, with the unique shot id, you can't overwrite a shot accidentally given the same name, or have a filename clash.

3. We can search for timecodes (converting from frames since midnight at the correct frames per second) and rolls based on the inclusion of this information in the filepath.

## 8.5    Command line scripts for unarchiving TAR offloads

There are some scripts installed in the /home/codex directory of Digital Lab systems that can be used to unarchive files from TAR offloads to attached storage. These scripts can also be run on other Linux systems for the same purpose.

The scripts that are installed are:

**findtape.sh** – this can be used to search through the /etc/codex/tape-offloads sub-directories and locate files based one or more of rollname, shotname, and timecode.

**getframes.sh** – once findtape.sh has given details of the required tape and TAR files, this script can be used to unarchive the given files to attached storage.

**conformedl.sh** – this can be used to unarchive files to attached storage based on a CMX3600 format EDL file.

For further information on using these scripts contact support@codexdigital.com

## 8.6    Configuring Disk Offloading on a Digital Lab

### 8.6.1    Compatible drive types and connections

Digital Lab systems can offload to a range of drive types using different configurations and methods.

| Device | Connection |
|---|---|
| USB/eSATA hard drive | Locally attached via USB/eSATA ports on front panel |
| Network server | Network attached via built in Gigabit Ethernet or optional 10- Gigabit Ethernet |
| Fibre Channel RAID | Locally attached via optional Fibre Channel card. |

### 8.6.2    File systems and interoperability

The table below identifies the supported file systems of the three main operating systems users will have to consider when dealing with offloads to hard disk.

Operating System Fully supported file systems:

- Mac FAT32, HFS+
- Linux FAT32, Ext2, Ext3, XFS
- Windows XP/Vista FAT, FAT16, FAT32

The suggested options, along with their limiting factors, are:

**- FAT32** if the drive is to be accessed in Windows and on a Mac. This has a 4GB file size limit that may prevent it's use if high quality proxies are required of lengthy shots (for example, a DNxHD185 Avid MXF file would exceed this size if longer than 173 seconds). Also if this filesystem is created in Windows there is a 32GB partition limit - but you can create larger partitions under Linux that are still accessible in Windows.

**- XFS** if the drive is only to be accessed by Linux machines. This filesystem is faster to read/write than FAT32 and does not suffer from fragmentation issues. Ext3 can also be used in this context, except on a high-performance RAID system.

**- HFS+** if the drive is to be used on Mac/Linux. If to be used on Linux the drive must be formatted on a Mac as "Mac OS Extended (no journaling)".

**Note:** NTFS formatted drives cannot be offloaded to directly as this filesystem is not fully supported.

Determining the drive name (for mounting and/or formatting of a USB/eSATA device)

Power up the system but do not load any Datapacks. With a keyboard attached, press CTRL-ALT-F1. Then login as user=root, password=codex. Connect the USB/eSATA drive and observe what is shown on the screen as it is assigned a name by the system.

There should be something like this:

```
sdb: assuming drive cache: write through
sdb: sdb1
sd 4:0:0:0: Attached scsi removable disk sdb
```

Typically the drive will be assigned the drive name /dev/sdb1 (the system drive is /dev/sda), but if you have other drives connected here is how to determine the drive name. Enter:

```
fdisk -l
```

You will see all the drives and their partitions listed. One will be your drive, and should be identifiable by the filesystem and capacity.

### 8.6.3    Mounting and unmounting a USB/eSATA device for Disk offloading

Assuming the drive name was /dev/sdb1 then to mount the USB device, enter:

```
mount /dev/sdb1 /mnt/usb <enter>
```

**Note:** if a drive has been formatted on Mac as "Mac OS Extended (no journaling)" there will be an EFI GPT partition at the beginning, meaning you must mount the second, or possibly third partition, e.g. /dev/sdb2. The command 'cat /proc/partitions' will show all disk partitions that are attached.

The mount command mounts the device to the directory /mnt/usb which can be specified as the destination for offloading in /etc/codex/offloader.conf

To unmount the USB device when you have finished offloading enter:

```
umount /mnt/usb
```

### 8.6.4    Setting up the Disk offloader to interface with a USB/eSATA device

To configure the system for Disk offload to a USB/eSATA device, edit the /etc/codex/offloader.conf file to read:

```
# Codex Offloader configuration file

disable_mount
mount_point_dir /mnt/usb
```

### 8.6.5    Setting up the Disk offloader to interface with a Fibre Channel RAID

**Note:** the instructions below are only for configuring the system for use with an ATTO Celerity Fibre Channel card.

Within the file-system there is a configuration file that must be set to contain the correct SCSI bus numbers for the Fibre Channel card. With a Fibre Channel card fitted follow the steps below to determine the correct SCSI bus numbers and edit the configuration file:

Access the Linux command prompt and log in as user=root, password=codex. Now enter the following:

```
ls -l /proc/scsi/celerityfc
```

This will show the contents of the celerityfc directory, which will contain two other directories called, for example, 3 and 4. These are the SCSI bus numbers for the Fibre Channel RAID.

In this example we would edit the /etc/codex/offloader.conf file to contain:

```
# Codex Offloader configuration file

mount_point_dir /mnt/offload
first_scsi_bus 3
```

This will copy to one destination. To copy to two destinations add the line:

```
num_scsi_buses 2
```

A Fibre Channel RAID can be hot-mounted and unmounted using the MOUNT/UNMOUNT button on the SETUP tab->OFFLOAD screen->Disk/LTFS tab.

### 8.6.6    Setting up the Disk offloader to interface with a network server

The Digital Lab can also offload to networked systems connected via Ethernet – either Gigabit (Gig-E) or 10-Gigabit (10-Gig). Gig-E comes as standard on Codex machines, and a 10-Gig card is an optional extra. There are certain 10-Gig cards which Codex recommend and have been tested thoroughly with the system.

In comparison to the direct SCSI attached USB drive or Fibre Channel RAID, this type of connection uses one of several network protocols for data transfer. These various protocols, combined with the different hardware

options available, can provide significantly different transfer rates – contact Codex if you need advice.

The Disk Offloader can be used to transfer files to a network server, but this method is not optimal and therefore is recommended for when material can be drip-fed across to the RAID throughout the day.

First, the network server must be on the same network as the Codex.

Create an appropriate directory within /mnt to mount the network server to – as root, enter:

```
mkdir /mnt/network-server
```

Then, to mount the network share of the RAID from the command line, enter:

```
mount -t cifs //<ip address of RAID>/<shared drive> /mnt/network-raid
user=<username>,password=<password> 0 0
```

The RAID system should now be mounted on the /mnt/network-raid directory.
Now the /etc/codex/offloader.conf file needs to be edited as follows appropriately:

```
# Codex Offloader configuration file

disable_mount
mount_point_dir /mnt/network-raid
```

To unmount the networked RAID after offloading type:

```
umount /mnt/network-raid <enter>
```

24 hour support line +44 (0) 7985 467 665

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