

**CODEX<sup>®</sup>**

USER GUIDE

CODEX XL-SERIES

27 JULY 2017



# Codex XL-Series

## Safety Warnings

Please observe any warnings and follow all instructions.

- Do not use this equipment near water and clean only with a dry cloth.
- Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other equipment (including amplifiers) that produce heat.
- Do not expose to excessive vibration, or drop this product.
- Do not defeat the safety purpose of the polarised or grounding-type plug. A polarised plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade, or the third prong, is provided for your safety.
- If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched, particularly at plug ends, convenience receptacles, and the point where they exit from the equipment.
- Only use accessories specified by the manufacturer.
- Unplug this equipment during lightning storms or when not in operation for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the equipment has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the equipment, has been exposed to rain or moisture, does not operate normally, or has been dropped.
- To reduce the risk of fire or electric shock, do not expose equipment to rain or moisture.
- To avoid electrical shock, do not attempt to open this equipment. Refer servicing to qualified personnel only.

## Disclaimer

Codex products are continually developed to remain at the forefront of the industry, and as such the information in this guide is subject to change without notice. Whilst Codex endeavours to ensure that all documentation provided is correct at the time of writing, this document is not guaranteed to be error-free.

Codex does not assume responsibility for issues or losses due to misinterpretation of the information in this document, errors in this document, or incorrect configuration or installation of the equipment described herein.

This document is issued in conjunction with the software to be used as per the conditions of the associated beta agreement.

Please report any errors found in this document to [support@codex.online](mailto:support@codex.online)

## Support and Servicing

For assistance with your XL-Series please contact [support@codex.online](mailto:support@codex.online)  
User Guides are available from <https://www.codex.online/support/user-guides>

### FCC Regulatory Compliance Notice

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Modifying the equipment without Codex's authorization may result in the equipment no longer complying with FCC requirements for Class A digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### EU EMC Compliance Statement

Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment, this equipment may cause radio interference.

Note: the use of USB extension cables may cause interference and is not recommended.

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# 1. Introduction

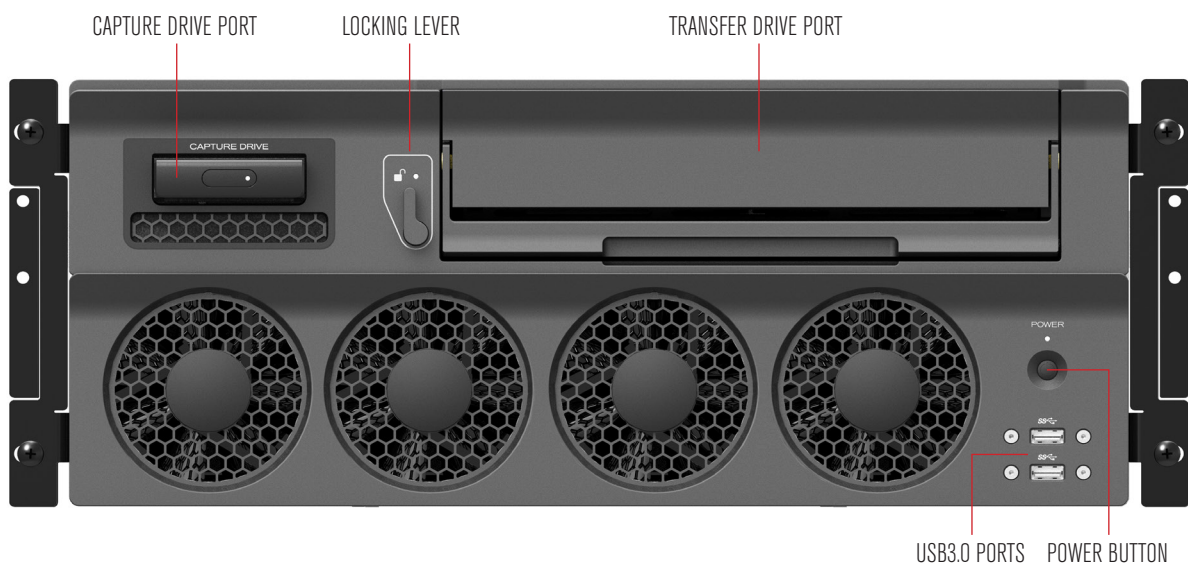
Welcome to this guide for the Codex XL-Series - a production-proven, rack-mounted network attached device ready to integrate into your production or post infrastructure, whether it's near-set or in a post facility.

The XL-Series comes installed with Codex Production Suite software. This guide will focus on aspects unique to the XL-Series. For information on Production Suite features that are available on both XL-Series and macOS platforms, please refer to the Production Suite User Guide.

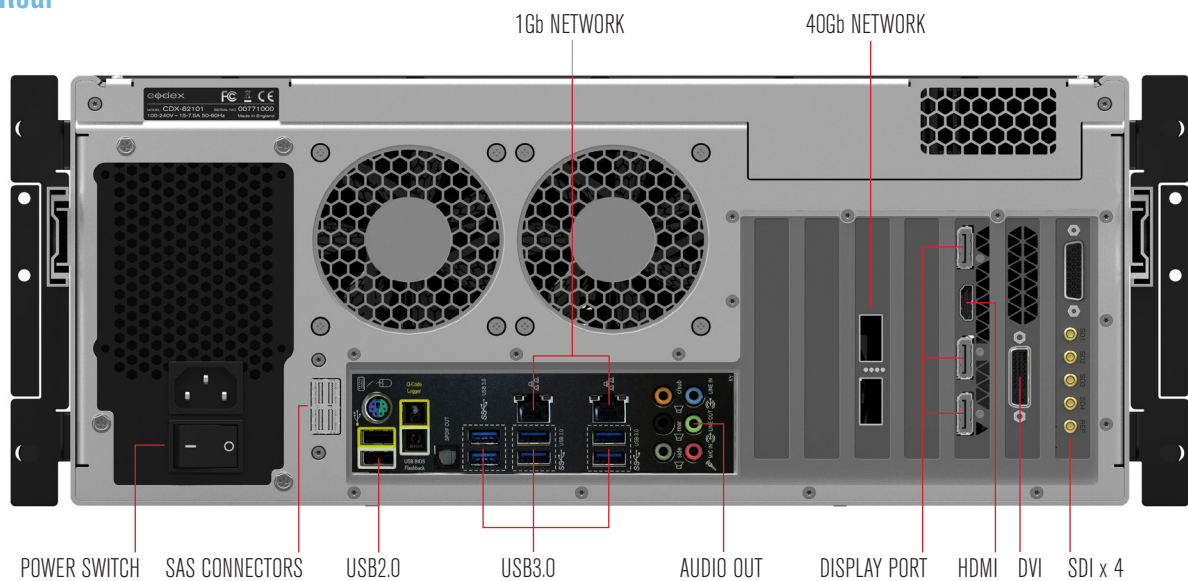
This guide assumes that the XL-Series is installed with the latest CodexOS operating system. Some features detailed in the guide are not available in the previous Fedora based operating system.

## 2. Product Diagrams

### 2.1. Front



### 2.2. Rear



The front fans are for air intake, and the rear fans are for air exhaust. Do not block any fans as this may lead to the system overheating. Some connectors on the rear of the XL-Series are inactive: D-SUB connector above SDI outputs, and audio connectors except for labelled AUDIO OUT.

**Note:** the XL-Series should always be installed and used in the orientation shown in the diagrams above. Installation in a different orientation may cause damage to the system.

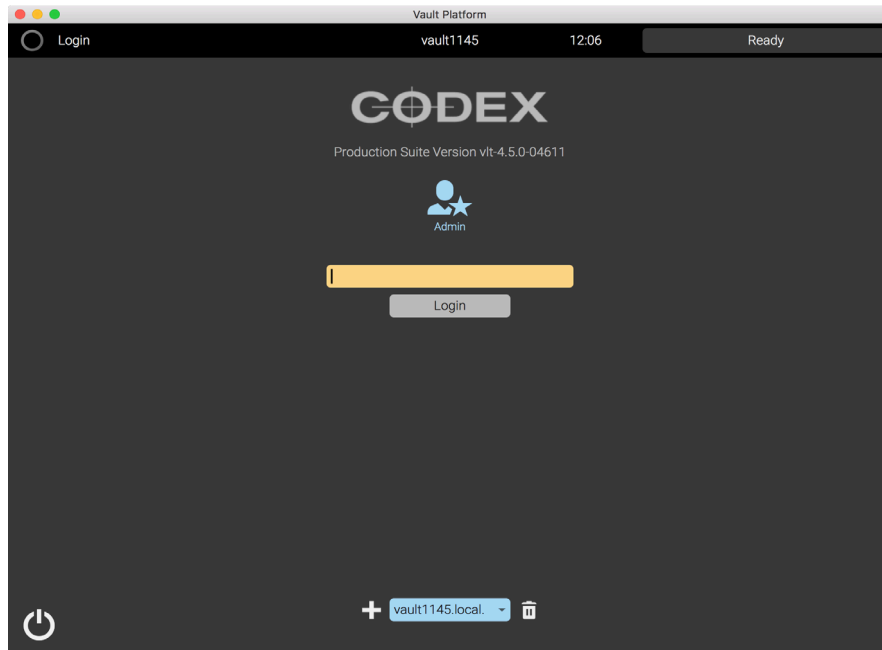
### 3. Power Requirement

The XL-Series requires mains power from 110V-240V AC. The power supply can draw up to 1250W.

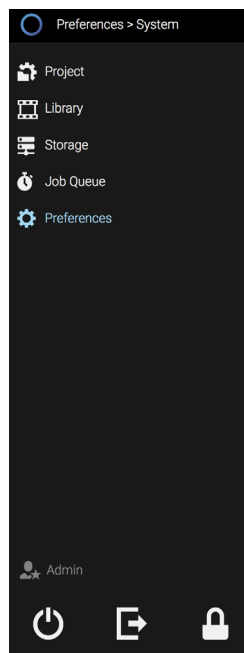
### 4. Power On and Shutdown

Connect mains power to the XL-Series and ensure the power switch on the rear of the machine is set to On. Press the Power Button on the front panel to start the machine.

The boot up process is complete when the attached monitor displays the Login screen.



At the bottom left of this screen is a power icon. Click this and then click 'Shut down now' to initiate the shutdown process. When logged in, open the Main Menu (blue ring) to access the power icon.



The shutdown process is complete when the light above the Power Button is switched off.

## 5. Display, Mouse, and Keyboard

### 5.1. Display

The display for controlling the XL-Series can be connected to the HDMI or DisplayPort connector on the GPU. A wide range of display resolutions can be used, from HD to 4K (1920 x 1080 to 4096 x 2160). The resolution of the display will be detected automatically from the EDID information it provides.

It is possible to force the GPU to output to the display at a different resolution, but not through the Codex Production Suite software. Contact **support@codex.online** for support if this is required.

### 5.2. Mouse

A standard PC mouse can be used with the XL-Series.

### 5.3. Keyboard

A standard PC keyboard can be used with the XL-Series. It is recommended to use a PC keyboard, and not a Mac keyboard (some key mappings are different and may not be correct).

The default keyboard layout is ISO (UK) rather than ANSI (US). This can be modified with a setting during installation of the CodexOS base image.

Alternately, the following command line can be applied from a Terminal window to change to a US keyboard layout:

```
localectl set-keymap us
```

Contact **support@codex.online** for support if this is required.

## 6. SDI Monitor

The XL-Series has a video card with 4 SDI outputs. These can be used to connect to a single SDI monitor, at resolutions from 1920x1080 to 4096x2160. Playback can be at frame rates from 23.98 to 60fps, depending on the video format setting. The output setting can be changed when Codex Production Suite has clips loaded in Vault Review. For full instructions on using Vault Review see the Codex Production Suite User Guide, available from <https://codex.online/support/user-guides>

## 7. Logging In

When the XL-Series is started you will need to log in. By default there is no password, so simply click the Login button. If a password has been set, the details should be checked with the owner of the XL-Series.

Once logged in you can set up accounts for other users from Main Menu (blue ring) -> Preferences -> Users.

## 8. Codex Production Suite

The XL-Series runs the Codex Production Suite software. The features and functions of the software are detailed in the Codex Production Suite User Guide, available from <https://codex.online/support/user-guides>

In summary, Codex Production Suite is a fully-featured dailies and archiving system featuring sophisticated tools for colour grading and LUT management, QC, metadata editing and audio sync so you can manage and create all your deliverables within one unified system. Transcode to all the formats you need to deliver, faster than real-time, even with an input LUT, CDL and a 3D LUT.

Codex Production Suite provides a comprehensive feature set including:

- Support for many popular cameras - ARRI ALEXA/MINI/AMIRA, Codex Action Cam, Canon C700/C500/C300 Mark II, Panasonic VariCam 35 and Pure, Sony F65/F55/F5, RED EPIC/WEAPON, Phantom Flex 4K and GoPro.
- View, edit and add metadata in the Library.
- Clone camera original data to local and networked storage.

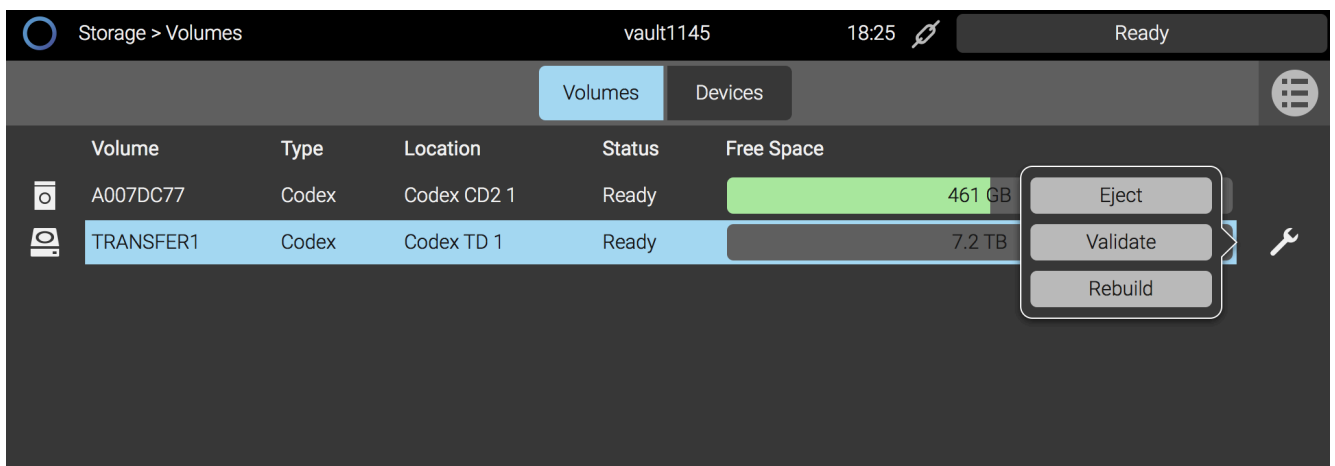
- Primary colour correction - play back, adjust and apply LUTs and CDL looks in Vault Review.
- Synchronise audio, either with timecode or manually.
- Add Quality Control (QC) notes and create PDF QC reports.
- Transcode to common deliverable formats such as ProRes, DNxHR/DNxHD, DCP and H264 with LUTs, CDL, burn-ins and masks.
- VFS (Virtual File System) for fast, flexible and powerful deliverables creation.
- Framings to allow customisable extraction of 'region of interest' from source image into deliverables.
- Archive to disk or LTFS tape with md5 verification.

## 9. Loading and unloading media

Following the correct procedures for loading and unloading media is very important. Failure to do so may result in damage to the media and compromise data integrity.

Media will be unloaded automatically when the XL-Series is shut down.

**WARNING: Do not unload media when it is reading or writing.**



### 9.1. Transfer Drive

**Loading** – with the handle on the Transfer Drive lifted, gently insert it fully into the port on the front of the XL-Series. Lower the handle to lock the Transfer Drive in place and the loading process will begin. During this time the LED next to the Transfer Drive will flash blue. When the Transfer Drive has loaded the LED will turn green.

**Unloading** – go to the Storage screen of the software, select the Transfer Drive (“Codex TD 1”). Click the Wrench symbol, and then click Eject. While unloading the LED next to the Transfer Drive will flash blue, and become solid blue when unloading is complete. Push the locking latch to the left, then raise the handle on the Transfer Drive and pull gently to remove it from the XL-Series.

An alternate unloading method is to push the locking latch to the left, and raise the handle slightly. This will trigger the unload sequence. Wait until the LED stops flashing and becomes solid blue, then raise the handle fully and pull gently to remove the Transfer Drive.

### 9.2. Capture Drive

**Loading** – gently insert the Capture Drive fully into the port on the front of the XL-Series. The loading process will begin, and during this time the LED on the Capture Drive will flash blue. When the Capture Drive has loaded the LED will turn off.

**Reading/writing** - when the Capture Drive is reading or writing, the LED will be green.

**Unloading** – go to the Storage screen of the software, select the Capture Drive (“Codex CD2 1”). Click the Wrench symbol, and then click Eject. While unloading the LED on the Capture Drive will flash blue, and become solid blue when unloading is complete. Pull the Capture Drive gently to remove it from the XL-Series.

An alternate unloading method is to press the Eject button on the end of the Capture Drive. This will trigger the unload sequence. Wait until the LED stops flashing and becomes solid blue, then pull gently to remove the Capture Drive.

## 9.3. External Drives

The XL-Series allows general purpose hard drives and SSDs to be loaded via a range of connections: USB3.0, SAS, and eSATA. The drive must be formatted with one of the following filesystems before it can be used with the XL-Series:

- ExFAT
- FAT
- Ext3
- HFS
- HFS+
- NTFS
- XFS
- UDF

Note: APFS (Apple File System) is not supported.

**Loading** – connect the external drive and it will be mounted automatically. When the drive has mounted it will be shown on the Storage screen.

**Unloading** – go to the Storage screen and select the drive. Click the Wrench symbol, and then click Eject. The drive will stop showing on the Storage screen when it has unmounted. It is now safe to disconnect the drive.

Note: if an external drive has been badly unmounted/ejected, this may prevent successful mounting on the XL-Series. To resolve this, reconnect the drive to a Mac and use Disk Utility to check/repair the volume, before performing a proper unmount. The drive should then mount on the XL-Series successfully.

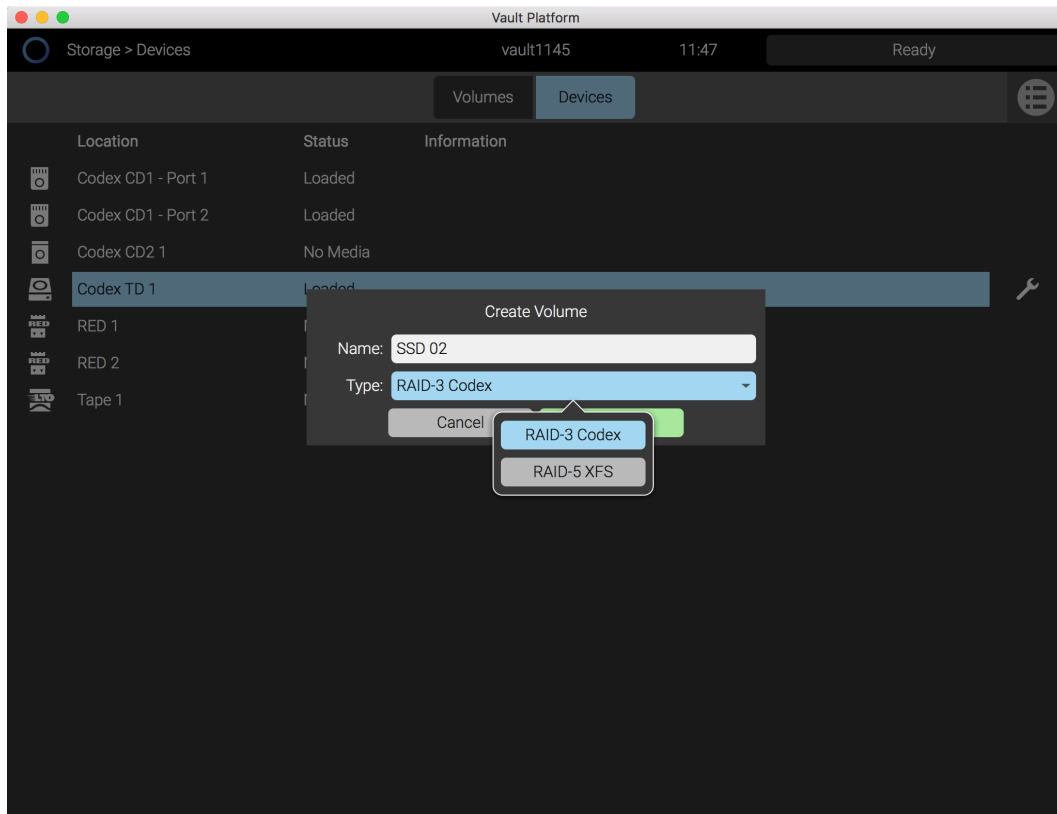
## 10. Formatting the Transfer Drive

A Transfer Drive can be formatted with either a 'RAID-3 Codex' or 'RAID-5 XFS' filesystem. The option selected will determine which types of material can be stored on the Transfer Drive:

Type	Supported material
RAID-5 XFS	<p>When formatted in this way, the Transfer Drive can contain any file format supported by Codex Production Suite*:</p> <ul style="list-style-type: none"> <li>• ARRI ALEXA Classic/XT/SXT/Mini - ARRIRAW (16:9, 4:3, Open Gate), all ProRes variants.</li> <li>• ARRI AMIRA - all ProRes variants.</li> <li>• Panasonic VariCam 35 - VRAW (UHD and 4K, 10-bit and 12-bit).</li> <li>• Canon C700 and C500 - Canon Cinema RAW (UHD and 4K).</li> <li>• Canon C300 Mark II - XF-AVC MXF.</li> <li>• Sony EX3 - MPEG-2 MXF.</li> <li>• Sony F5, F55, and F65 - Sony RAW MXF, XAVC MXF.</li> <li>• GoPro Hero - H.264.</li> <li>• RED - REDCODE RAW R3D.</li> <li>• Phantom Flex 4K - Cine files.</li> <li>• Codex Action Cam - CDX RAW.</li> </ul> <p>*With the exception of ALEXA 65, which is only supported on RAID-3 Codex.</p>
RAID-3 Codex	<p>When formatted in this way, the Transfer Drive can only contain RAW material recorded to Capture Drives:</p> <ul style="list-style-type: none"> <li>• ARRI ALEXA 65 - ARRIRAW.</li> <li>• ARRI ALEXA Classic/XT/SXT/Mini - ARRIRAW (16:9, 4:3, Open Gate).</li> <li>• Panasonic VariCam 35 - VRAW (UHD and 4K, 10-bit and 12-bit).</li> <li>• Canon C700 and C500 Canon Cinema RAW (UHD and 4K).</li> <li>• Codex Action Cam - CDX RAW.</li> </ul> <p>Performance for Cloning this material is slightly higher to RAID-3 Codex than to RAID-5 XFS. However, flexibility for different workflows is reduced. It is not possible to store material from other types of recording system, such as SxS ProRes, Sony SR Memory, AXSM, RED drives, etc.</p>



To format the Transfer Drive, from the Storage screen click the Devices tab. Select the Transfer Drive (“Codex TD 1”), then click the Wrench symbol and click ‘Create’:



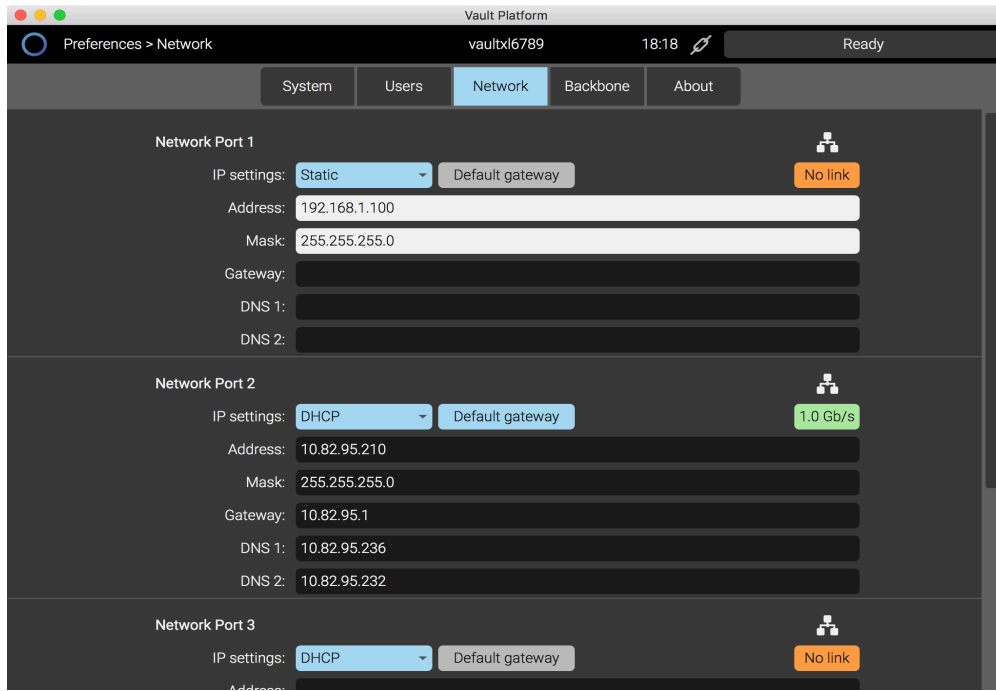
Enter a name for the volume, and select the filesystem type.

When a RAID-3 Codex filesystem is created, it can be used immediately and will build parity information as clips are copied to it. The parity information means that if one disk has a problem, the data will not be compromised.

When a RAID-5 XFS filesystem is created, it can be used immediately but the parity information takes several hours to build. During this time, the status in Storage -> Volumes will be shown as 'Initialising'. When the initialising process has completed then a problem with one disk will not compromise the data on the RAID. For this reason, it is recommended to allow the RAID to finish initialising before copying data to it.

## 11. Network Setup

The XL-Series has 2 x 1GbE and 2 x 40GbE network ports. The network settings are configured from the Preferences -> Network screen:



The network interfaces can be configured as either DHCP or Static. If the network provides internet access, enable the Default Gateway setting to allow Remote Connection (using TeamViewer - see later section for further details).

When there is no cable connected to a port, it will be shown as 'No link' (orange). When there is a cable connected, it will be shown with a link speed, such as 1.0Gb/s or 40Gb/s (green).

## 12. Network Shares

The XL-Series has some network shares set up by default:

Share Name	Description	Protocol	Username/Password
codexsettings	This share contains projectsettings.xml which includes all settings within the 'Project' area of Production Suite.	SMB	user=codex, pw=codex (ro*) user=root, pw=codex (rw**)
codexuser	This share contains folders for User luts, burnins, and filecards. Copy files here to use in Production Suite.	SMB	user=codex, pw=codex (rw)
codexvfs	This share provides access to clips stored on the system. The file format(s) in the 'codexvfs' are determined by the settings in the Project -> VFS screen.	NFS and SMB	user=codex, pw=codex (ro)
tmp	This share is typically used for copying over a new software version to the XL-Series prior to installation.	SMB	user=codex, pw=codex (ro) user=root, pw=codex (rw)

\*ro = read-only access. \*\*rw = read and write access.

It is possible to set up additional custom network shares on the XL-Series, and also to configure the system to automatically mount available network shares. If you require assistance in configuring network shares or mounts please contact [support@codex.online](mailto:support@codex.online).

## 13. Connecting with a remote User Interface

The XL-Series can either be operated locally with an attached display, mouse and keyboard, or otherwise a User Interface can be opened on a computer on the same network and used to control the machine. This is particularly useful if the XL-Series is located in a server room where it is not easily accessible.

To use this functionality:

- Note the software version of Codex Production Suite installed on the XL-Series.
- Install the corresponding version onto a Mac, which is on the same network. (Currently there is no support for the software on Windows.)
- Ensure that the local User Interface on the XL-Series is logged out (so that the 'Login' screen is shown).
- Open the Vault Platform software on the Mac.
- At the Login screen, click the + icon.
- Enter the network IP address of the XL-Series and click OK.
- Click 'Login' to access the XL-Series.

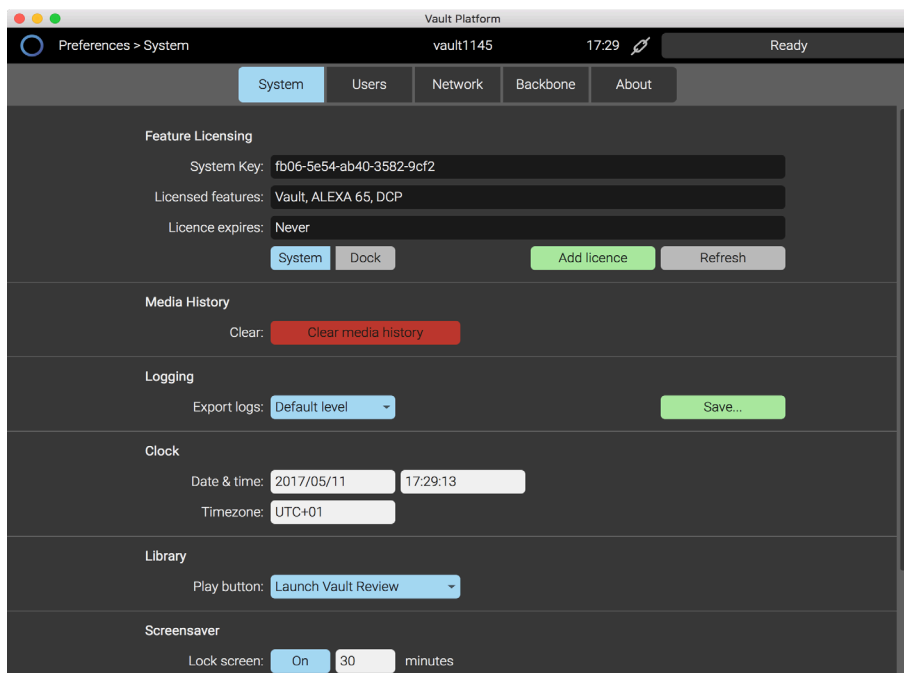
**Note:** only one User Interface can be logged into the XL-Series at a time. If the local User Interface is already logged in, this will block the connection from the remote User Interface.

## 14. Preparing the XL-Series for a project

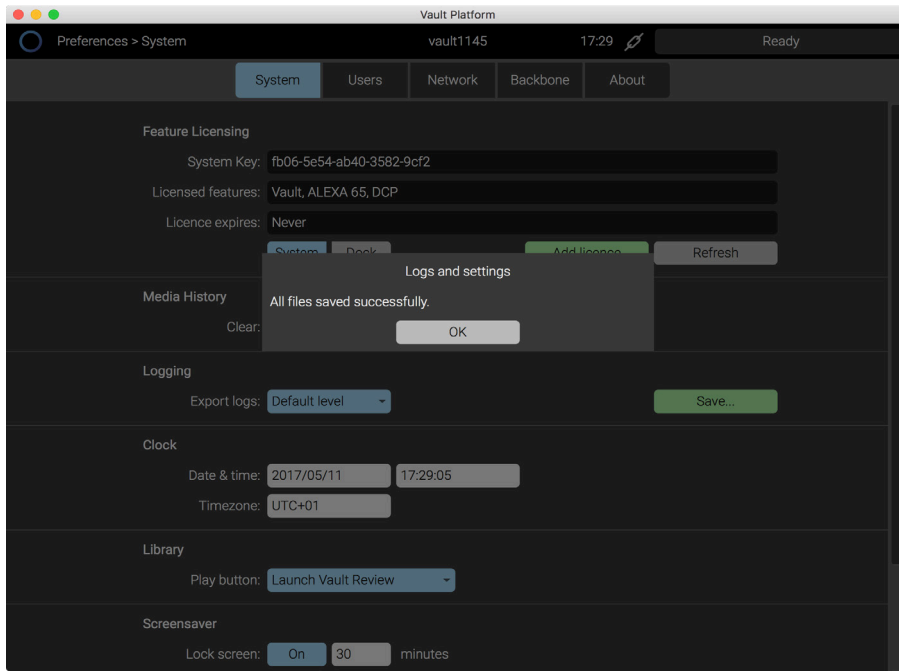
There are some important steps that should normally be completed before the start of a new project:

### 14.1. Saving Logs

The first step is to save the system log files, which includes all settings and the media history - a record of all the media from a project. Connect a USB stick to save the logs to. From the Main Menu, click Preferences and then in the Logging section select Default Level and then Save.



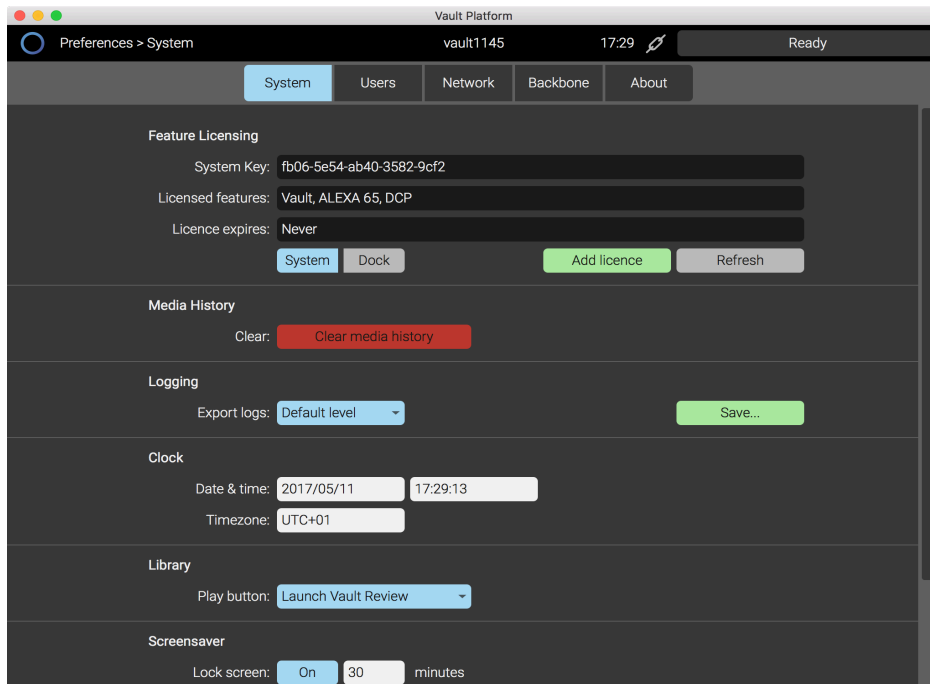
From the file browser select the USB stick, then click OK and the log files will be saved, e.g. vaults1048\_20130308\_142631\_logs.tgz



This file is named as follows: vaultxl<SerialNumber>\_<Date>\_<Time>\_logs.tgz

## 14.2. Clear media history

From the same Preferences screen, select 'Clear media history'.

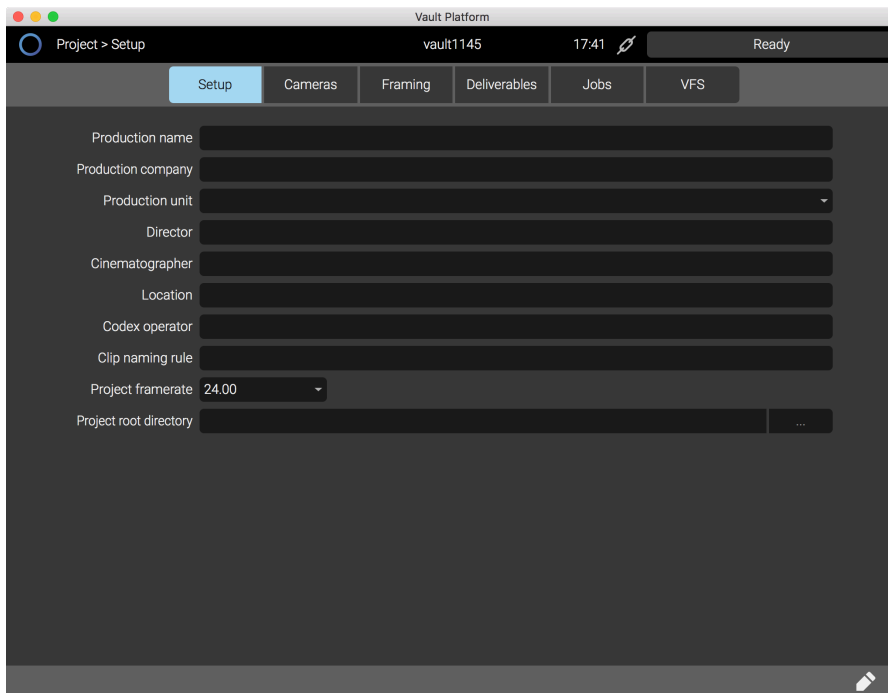


This will remove the record of media names used on the last project, and prevent warnings being shown if a media name on the new project matches a media name from the previous project.

The warnings are a helper feature to avoid duplicate roll names during a project.

## 14.3. Setting up Project information

From the Main Menu click Project.



The first tab is labelled Setup and here you can enter information about the production that the XL-Series will be used on. Click the pencil icon (lower right) to edit the information. This information can easily be added to clip metadata with the Media Check task.

## 14.4 Setting up templates

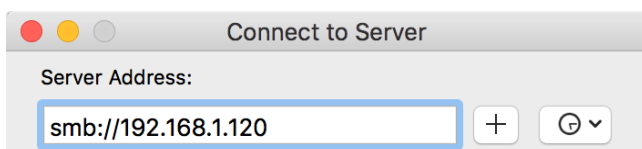
After the Setup tab, there are tabs for Cameras, Framing, Deliverables, Jobs and VFS. This is where the XL-Series is configured for your workflow. Refer to the Codex Production Suite User Guide for full details on the options available, and how to configure the system for your requirements.

## 14.5. Loading LUTs

Please refer to the section about Network Shares. The network share 'codexuser' contains a folder for user LUTs.

To connect to this share on Mac:

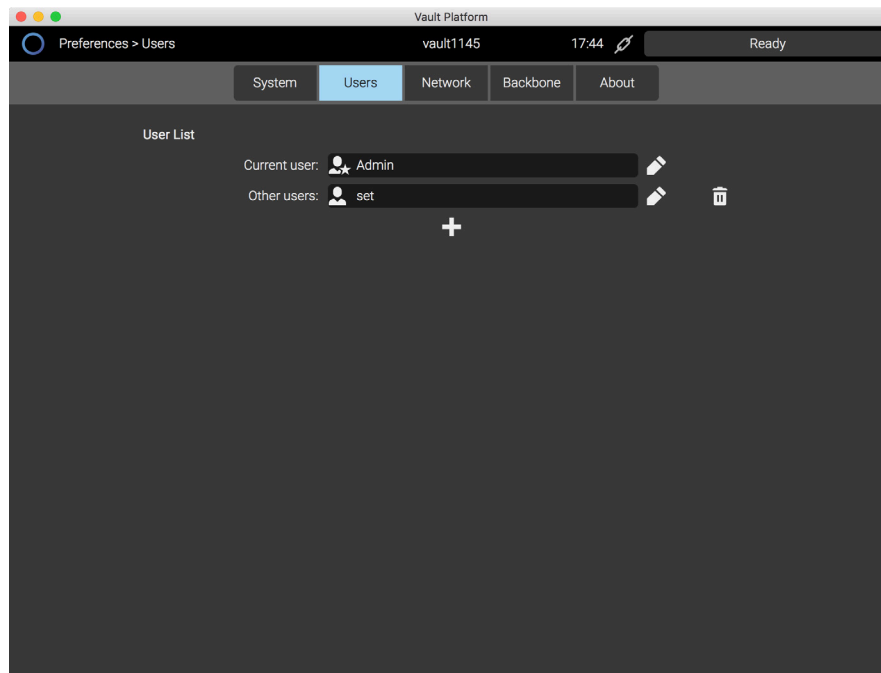
- Ensure the Mac and XL-Series have compatible network settings.
- Use Finder on the Mac, and then the Cmd-K shortcut.
- In the 'Connect to Server' box, enter: "smb://<IpAddressOfXL>". See the example below:



- Click 'Connect' and enter username 'codex' and password 'codex'
- Copy your LUT file to the 'luts' folder.

## 14.6. Setting up user accounts

From the Main Menu, click Preferences and then click the Users tab.



By default there is an Admin user with no password. Click the pencil icon to edit the details and add a password if required.

Click the + icon to add a new user. If the 'Administrator' button is highlighted blue, this means the user can edit all the settings in the Project area. If the 'Administrator' button is grey, this means the user can operate the machine but not change the settings, cannot access the Preferences area, and cannot delete clips in the Library.

## 15. Remote Connection (TeamViewer)

From the Main Menu, click Preferences and then click the System tab. There is a Remote Connection section - click the Start button here to enable TeamViewer.

A 9-digit ID will be displayed, and you can then connect to the XL-Series from another machine with the free TeamViewer software installed. The password to connect to the XL-Series is 'codexvault'.

The TeamViewer software for Mac and Windows is available from <https://www.teamviewer.com/en/>

For the Remote Connection to work, the XL-Series must be connected to a network with internet access, and the network port being used must be configured as the 'Default gateway' in Main Menu -> Preferences -> Network.

