



Using K2 with Apple Final Cut Pro 7

K2-FCP-Connect provides tight integration with FCP 7, enabling native Edit-in-Place of growing files, file transfers and iSCSI or Fibre Channel connectivity to a SAN with Quality of Service

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APPLICATION NOTE



K2 now offers a complete set of tools for working with Apple Final Cut Pro 7 NLEs. K2-FCP-Connect is a set of tools that includes GV-Connect, an FCP 7 plug-in that enables easy file transfers between K2 storage and FCP 7, including the ability to browse K2 content from within FCP 7. Most importantly it provides FCP 7 with Quality of Service, which allocates bandwidth across all editors.

K2-FCP-Connect – Key Features and Formats

This application note details the new K2-FCP-Connect and other options to interface Apple Final Cut Pro 7 NLEs to K2 standalone and K2 SAN, Aurora SAN systems and K2 production & workgroup storage (Note that K2-FCP-Connect does not support FCP X.).

Key Benefits – The ability to edit-in-place growing files is a powerful feature to speed up your workflow, especially at live events. See Table 1 for more features and benefits.

Supported Formats – K2 and FCP 7 support many common formats, which eliminates transcoding for better performance and faster workflows. See Table 2 for a complete list.

Quality of Service (QOS) – K2-FCP-Connect solves the problem of one editor taking excessive bandwidth such that other editors do not have enough bandwidth for efficient editing. By allocating bandwidth across all editors, everyone is assured of being able to do their job.

Connectivity Options – K2-FCP-Connect enables FCP NLEs to connect into a K2 SAN via iSCSI or Fibre Channel. These connections provide the highest performance and functionality of all options. Other connectivity options are shown in Table 3.

System Specifications:

- K2 system software V3.3 or later
- K2 Summit/K2 Solo software V7.1 or later (including K2 Summit software v8.0)
- Aurora V6.5.2 or later
- FCP V7.x (does not support FCP X)
- Intel-based MacPro systems

Table 1: Key Features

Feature	Benefit	Comments
Edit-in-Place	Faster editing & faster finished product that is ready to play to air	Apple XSAN license is required for iSCSI or FC connection Loop or continuous record is not supported
High Performance	With iSCSI or FC connections, users experience excellent performance, especially for HD material	Traditional CIFS connections make HD editing or multiuser editing slow
Edit Growing Files	In a live environment, material can be edited while still being recorded	As an event is being recorded, FCP 7 can edit content to generate a highlights package Other systems require the file to be closed before editing
Transfer	Enables easy file transfers from K2 storage to FCP 7 local storage for local editing	To use this feature over a CIFS connection no XSAN license is required
Quality of Service	Ensures that no one user can monopolize bandwidth needed by other users	Allocates bandwidth as needed for each editor

Table 2: Supported Formats

Format	Supported Media Clients	Notes
DVCPRO 25, DVCPRO 50	K2 Summit/Solo, K2-SD	EIP, Growing files, Transfer Service
DVCPRO HD	K2 Summit	EIP, Growing files, Transfer Service
IMX 35, IMX 50	K2 Summit/Solo, K2-SD, K2-HD	EIP, Growing files, Transfer Service
XDCAM HD 25/35 (4:2:0)	K2 Summit/Solo, K2-HD	EIP, Growing files, Transfer Service
XDCAM HD 50 (4:2:2)	K2 Summit/Solo, K2-HD	EIP, Growing files, Transfer Service
Import .mov file to FCP	K2 Summit/Solo, K2-SD, K2-HD	Edit on FCP, save file back to K2

AVC-Intra Support – K2 Summit supports AVC-Intra 50/100. FCP 7 can read AVC-Intra files but cannot export AVC-Intra files. Contact Apple for more details on complete AVC-Intra support.

Table 3: Connectivity Options

Solutions	K2 Software Version	Physical Connection	Third-Party Components	Multiuser Access to File	Edit-in-Place	Notes
Basic 1 CIFS Connection	v3.3+ v7.1+ v8.0	CIFS/Ethernet	None	No	Yes	HD editing performance can be slow
Basic 2 File Transfer	v3.2+	CIFS/Ethernet	Flip4Mac (Telestream)	No	No – File Transfer	Good performance after file is transferred
K2-FCP-Connect w/Transfer Service	v3.3+ v7.1+ v8.0	CIFS/Ethernet	None – Use GV-Connect	No	No – File Transfer	Good performance after file is transferred
K2-FCP-Connect iSCSI or Fibre Channel	v3.3+ v7.1+ v8.0	iSCSI/Ethernet/ Fibre Channel	XSAN Client (Apple)	Yes	Yes	Highest performance option for most users

K2-FCP-Connect for K2 SAN Systems

K2-FCP-Connect provides SAN connectivity for FCP 7 with bandwidth Quality of Service and the ability to edit-in-place growing content directly on K2 shared storage systems. It includes:

1. K2 SAN license to enable iSCSI or Fibre Channel connectivity
2. GV-Connect FCP plug-in to provide a tight integration between the K2 and Aurora file systems and FCP. This plug-in enables easy file transfers between K2 or Aurora systems and FCP, the ability to browse content before transfers and the option to import an Aurora EDL. GV-Connect also enables the ability to edit growing files by indicating when new content is available.

Note: K2-FCP-Connect requires the Apple XSAN Client (available from Apple) to edit directly on the shared storage, and two gigabit Ethernet ports on the Mac. If used in file transfer mode the XSAN license is not required and only one gigabit Ethernet port is required.

Once installed, you can link K2 files to the FCP bin, update the FCP bin with new content from a growing file and save the finished edit back to the K2 SAN. A growing file is a file that is still being recorded on the K2. This K2 file is updated every 20 seconds and can then be updated in the FCP 7 bin by the user.

Note: The K2 should be configured to record in “clip” mode for edit-in-place. Edit-in-place is not supported in loop or continuous mode.

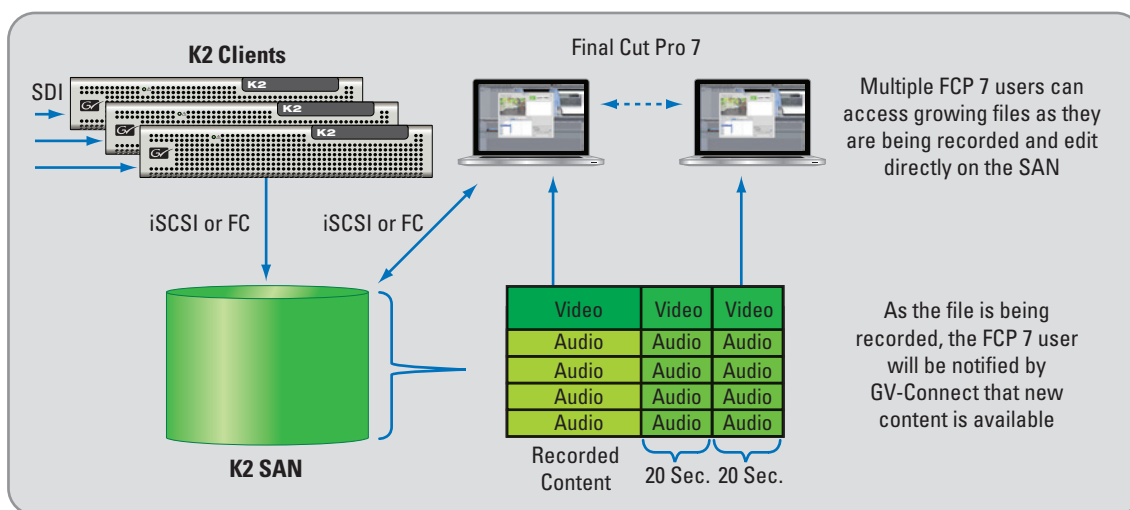


Figure 1. K2-FCP-Connect with direct-attached FCP 7 NLEs editing growing files directly off the K2 SAN. The GV-Connect FCP plug-in will notify the user that new content is available on the K2.

K2 Storage Solutions

K2 offers various storage solutions for shared storage applications depending upon your requirements. All systems can be configured with RAID-5 or RAID-6 and offer various levels of system redundancy. When configuring any of these storage solutions, bandwidth is allocated for the editors using K2’s built-in QOS manager. This ensures all editors get the bandwidth they need. See K2 Lx0 RAID Storage Systems data sheet for more details (SER-4015D).

Workgroup Editing SAN – For small workgroups, this is a pre-configured, specially priced SAN system for up to 10 Fibre Channel attached editors. It scales from 6 TB to 144 TB of low-cost storage.

Production SAN Storage – For ingest and editing application, the Production SAN expands on the Workgroup SAN concept but can be configured with K2 clients for ingesting material and can scale to a very large number of editors and high amounts of bandwidth and storage. This is a cost-effective, scalable system that can easily be expanded as your needs grow.

On-Line SAN – This is a very high performance Production SAN that can be used for play-to-air applications. It uses the highest performance drives available today, which provide the bandwidth to allow the K2 clients to reliably play to air. It can also scale for more clients, bandwidth or storage and various levels of redundancy.

GV-Connect

GV-Connect is a FCP 7 plug-in that provides three basic functions, File Import, Aurora EDL Import and Export.

Import

The Import function screen (Figure 2) shows a directory listing of the K2 storage system. From here, content can be selected and browsed in the Preview window. Once the content to edit has been selected, it can be edited directly (edit-in-place) or transferred to local storage.

The content can be native K2 files, Aurora files or an Aurora EDL that can be selected to continue an Aurora Edit session.

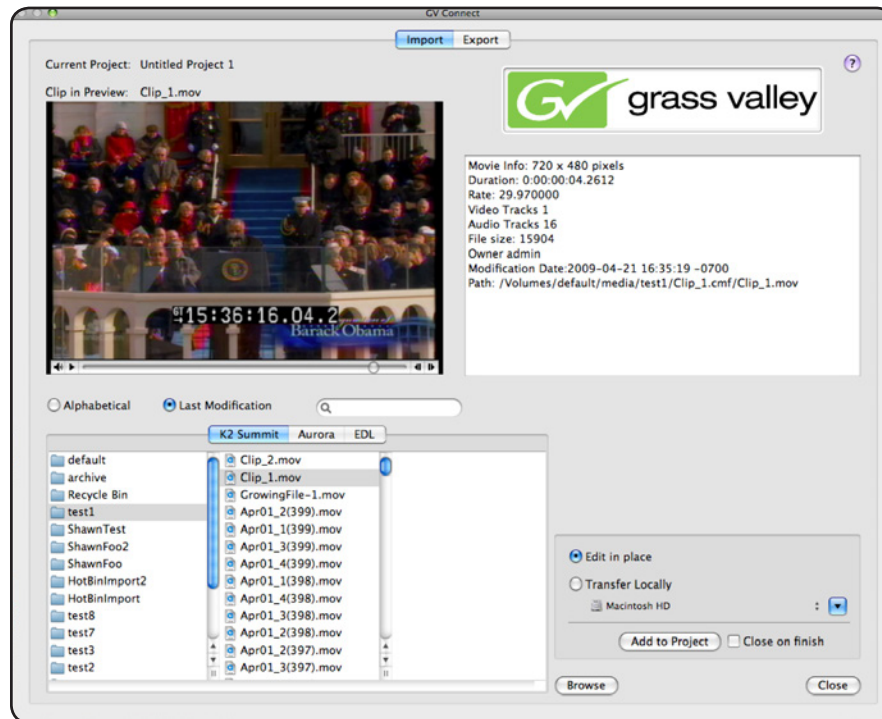


Figure 2. GV-Connect Import enables K2 files to easily browsed and linked or transferred to FCP 7 or editing.

Aurora EDL – This function takes a story that was originally edited with Aurora Edit LD or HD editors so it can be quickly finished on FCP 7. Using the EDL import makes this a much faster workflow.

GV-Connect (Cont.)

Export

When the edit is finished, the sequence is flattened/rendered and saved or transferred back to the K2 storage or other networked location (Figure 3). This feature uses the hot bin function on the K2 to facilitate registering the new content into the K2 file system. Files deposited into the hot bin directory are automatically imported into K2.

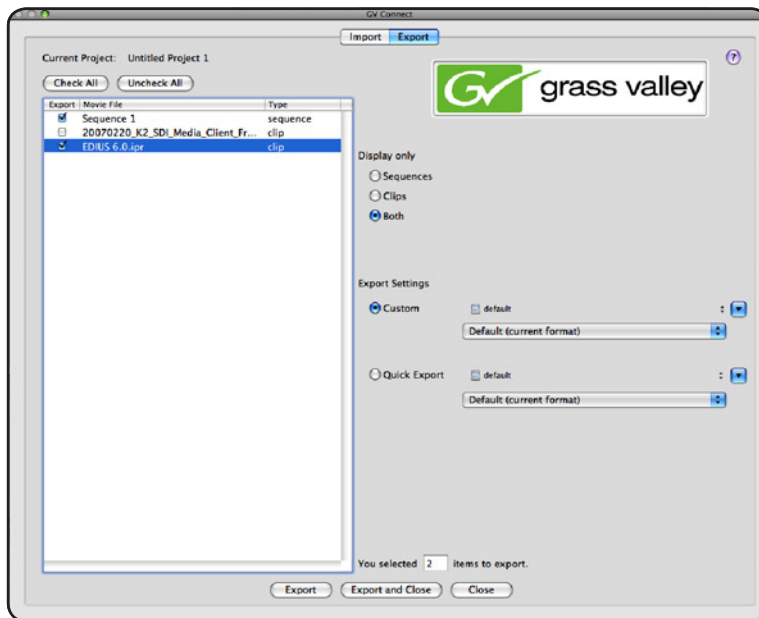


Figure 3. GV-Connect Export sends the new file back to K2.

Edit Growing Files

When editing a file that is still being recorded on K2, the QuickTime file is being updated every 20 seconds with new content. The GV-Connect icon in the upper right turns green to indicate new content is available to load into the FCP 7 viewer and to update the file in the FCP 7 bin. Users can simply click this icon to update the link.

GV-Connect Icon - this icon will flash to indicate that new content is available when editing a growing file. Click on this icon to update the FCP 7 bin with the new content.

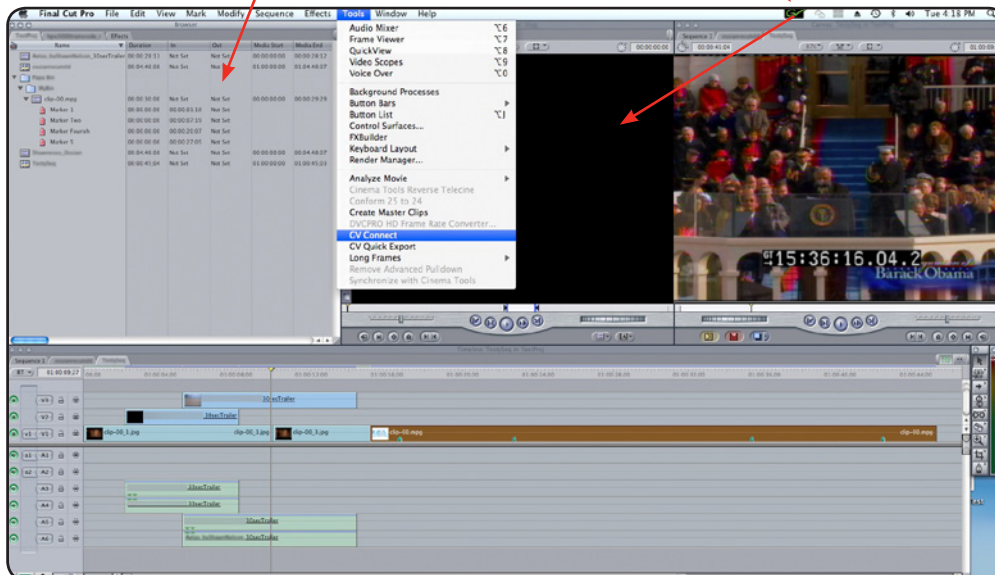


Figure 4. GV-Connect icon updates the FCP 7 bin and viewer with the latest content of a growing file.

Connections – K2 Standalone

There are two options for connecting FCP 7 to K2 standalone media clients without K2-FCP-Connect and GV-Connect. See Table 3 for functionality without K2-FCP-Connect (Basic 1 and Basic 2 solutions), and with K2-FCP-Connect (no Apple XSAN license required).

- Edit-in-Place – the K2 storage system can be mounted on FCP 7 via a CIFS connection (Figure 5) and edited directly on K2 storage. This is recommended for a single user of content up to 50 Mb/s. Because of limited CIFS performance, the file transfer method is recommended for higher bit rates.
- File Transfers – for more than one editor editing content on a single K2 media client, files should be transferred to FCP local storage for editing. This provides the best editing performance. Telestream's Flip4Mac (www.flip4mac.com/pro.htm) provides an easy transfer mechanism.

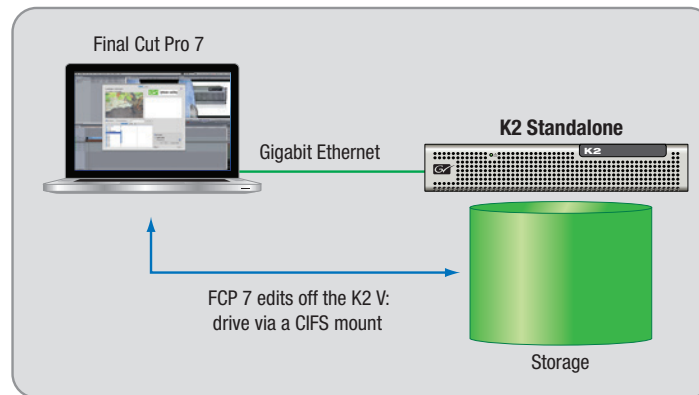


Figure 5. "Basic-1" connectivity solution — FCP 7 mounts the appropriate directory on the K2 V:/ drives and edits directly on the K2 storage.

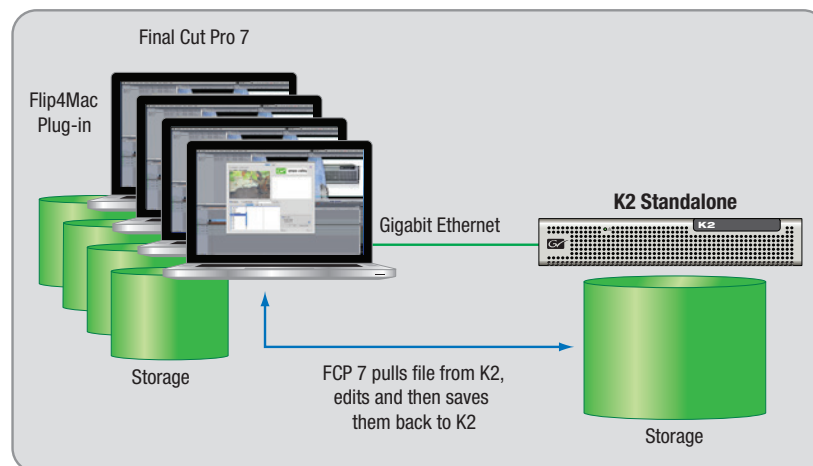


Figure 6. "Basic-2" connectivity solution with file transfers. Using the Flip4Mac plug-in on FCP 7, users can easily transfer files between FCP 7 and K2 storage.

Summary

K2 offers a variety of solutions to interfacing Apple Final Cut Pro 7 NLEs. Depending on the workflow, number of editors and storage requirements, various solutions are available to provide you with the greatest productivity and efficiency on the market today.

Operational efficiency is greatly enhanced with the ability to edit-in-place native files and with QOS ensuring everyone has the bandwidth they need without impacting any real-time video operations.



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GVB-1-0121B-EN-AN

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