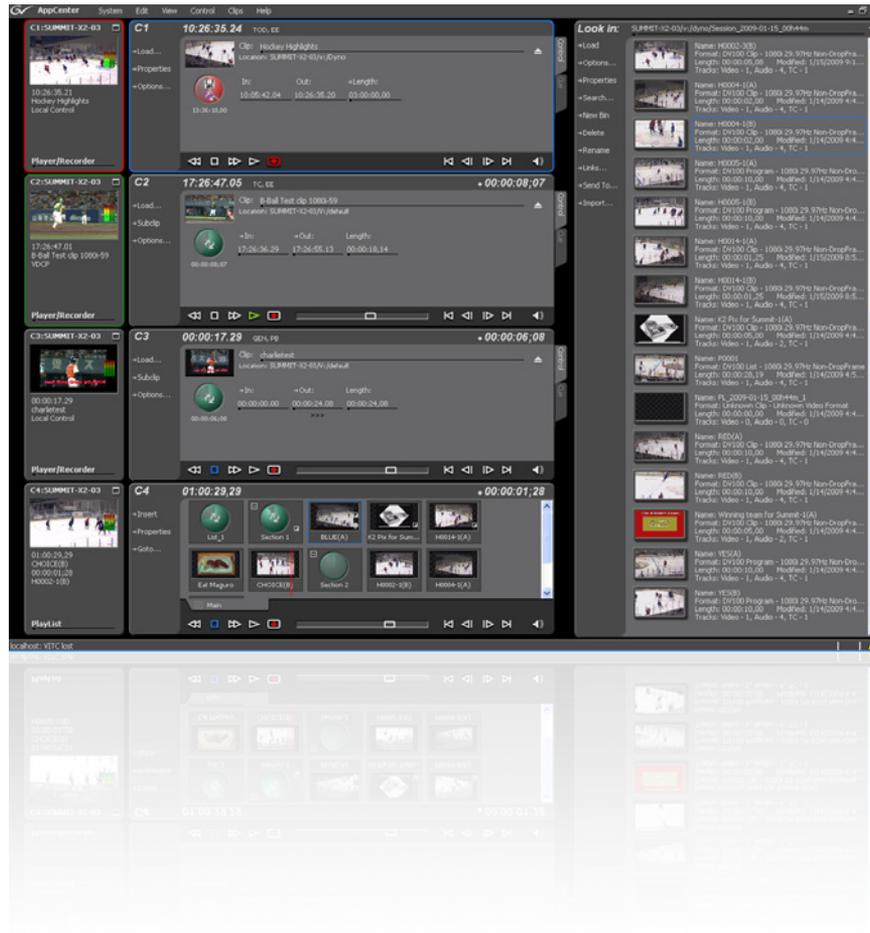


# APPLICATION NOTE

## IMPORT AND EXPORT OF FILES IN K2 MEDIA PLATFORM

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The Grass Valley K2 media platform incorporates an open file system and a number of services and features to make it fast and easy to share content with standard storage devices or with other systems across networks.

A look under the hood, this application note illustrates several practical examples of media transfer in K2 systems.

## INTRODUCTION

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In a file-based workflow, having the ability to work with a variety of file types from among a wide range of systems is crucial for an efficient operation. The Grass Valley K2 media platform features robust file import and export capabilities to make this possible.

## K2 MEDIA INTERCHANGE

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The Grass Valley K2 media platform has to be able to send and receive clips with other systems for archival, transcoding, editing, and so on—we refer to this as clip or media interchange. To accommodate diverse media production needs, the K2 media platform offers choices of media file transfer modes:

- Manually import, export, or move content via user interface on K2, GV STRATUS, K2 Dyno Replay Controller, or other K2-compatible peripheral device
- Move/transfer content using automation protocols such as VDCP or AMP
- Automated FTP transfers via content management systems, such as GV STRATUS
- Watch folder-based automated file imports/exports
  - HotBin import: Files imported from a preconfigured file folder on local or remote file system
  - Specialized HotBin imports for clip formats where clip is represented as a collection of files
  - HotBin export: Clips in a preconfigured clip bin exported to a known file folder

Each of the media interchange modes has its strengths and most appropriate use cases.

## EXAMPLE WORKFLOWS: K2 INTERCHANGE SERVICES

On K2 systems, generic file transfers can take place to/from local drives available to K2 (e.g., external hard drives, USB drives, or portable NAS), or to/from Windows network shares.

The K2 media platform can also act as an FTP server in order to complete tuned FTP network transfers of large files. FTP transfers in the K2 environment are exclusive to formats that do not require random access during import and/or export. When an FTP network transfer is invoked, the FTP server exposes standard FTP operations on K2 clips, such as clip listings, renaming, or deletes. The standard FTP command “get” represents a clip export, and FTP “put” represents a clip import.

Following are three examples of GV STRATUS/K2 file transfer workflows:

- Manual import/export of content using K2 AppCenter interface
- HotBin-based (watch folder) automated file import/export
- XML file import

### Manual Import/Export of Files

A user can manually import and export single files through K2 AppCenter application interface, or use HotBin services to automate the process.

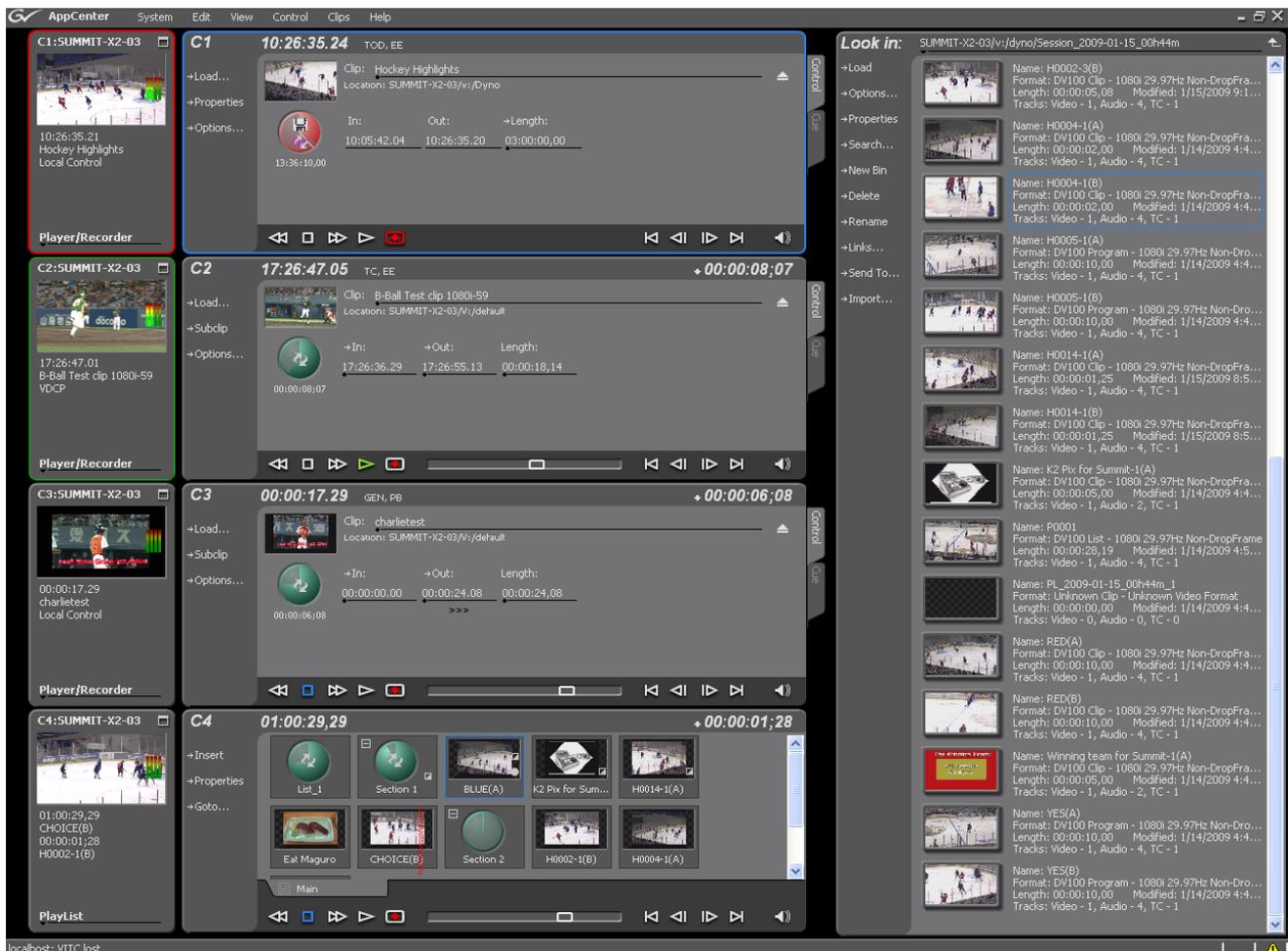


Figure 1 – K2 AppCenter user interface.

In manual mode, users import or export files through the K2 AppCenter interface, with support for a broad variety of common file types. Source files can be located on a local K2 Summit/K2 Solo system disk drive or a mapped networked drive. The source and destination devices must be in the same domain.

The flexibility of the manual file exchange mode is applicable to many different user scenarios. For instance, a reporter may wish to take media material currently on the K2 system and transfer it to a P2 storage card. With the K2 system’s ability to export in P2 format (DV, AVC-Intra only), the operation can efficiently be set up, monitored, and completed from the AppCenter user interface.

EXAMPLE WORKFLOWS: K2 INTERCHANGE SERVICES (CONT.)

Export/Import HotBin

With K2 HotBins service, a user can import or export a variety of supported file or stream types. Through a simple configuration wizard, watch folders (HotBins) can be specified on the K2's V drive (video drive). This feature can be used with the K2 Solo media server, a standalone K2 Summit production client, a standalone K2 media client, or the K2 media server with the role of primary FTP server on a K2 SAN.

For HotBin import, the service is configured on the K2 system and it monitors a watched folder (HotBin). The watched folder is a specified source directory that can be on a standalone K2 system, a K2 media server, a network connected storage array, or on Windows and Mac platforms. When files are placed in the watched folder, the HotBin service automatically imports them via FTP as a clip into the specified destination bin. The destination bin is on the K2 system that receives the imported media, and is within that K2 system's media file system and database. After a specified amount of time, the file is deleted from the HotBin folder.

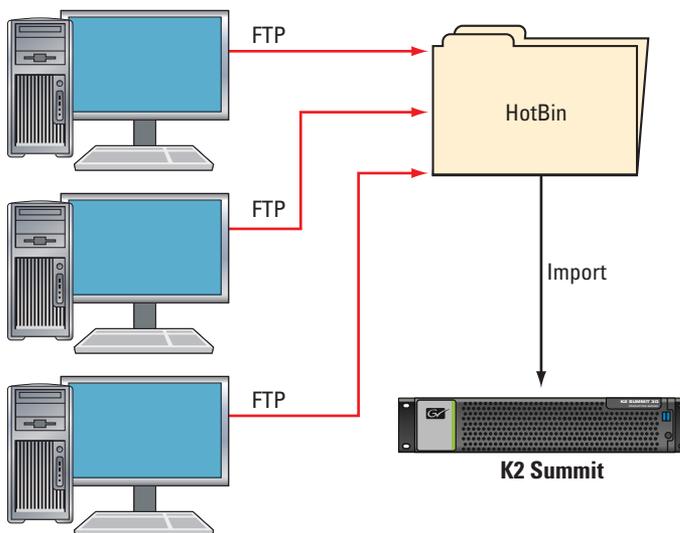


Figure 2 – K2 Import HotBin Service.

For export HotBin, the service is configured on the K2 system and it monitors a designated watched folder. The watched folder is a K2 storage system bin, configured to export the K2 media in the desired clip wrapper format (GXF, MXF Op-1A, MOV, P2). When K2 clips are moved to the folder, the service validates the media to make sure it has the proper structure for the desired file format. If valid, the service then automatically performs the necessary processing to export the clip via FTP to a designated destination folder. This destination can be to network connected devices such as other K2 systems, PCs, transcoders, or storage arrays such as an archive.

The export service and its HotBin must be on a K2 system that hosts the K2 FTP interface. On a standalone K2 system, the service exports the clip from the internal storage or direct-connect media storage of the K2 system. For a K2 media server with role of FTP server, the service exports the clip from the shared media storage of the K2 SAN. In both instances, the HotBin must be on the K2 system's V drive.

A variation of the K2 HotBin export function is HotBin file export in P2 format. This workflow automates the process of pushing ingested content out to a destination where users such as editors can readily use it.

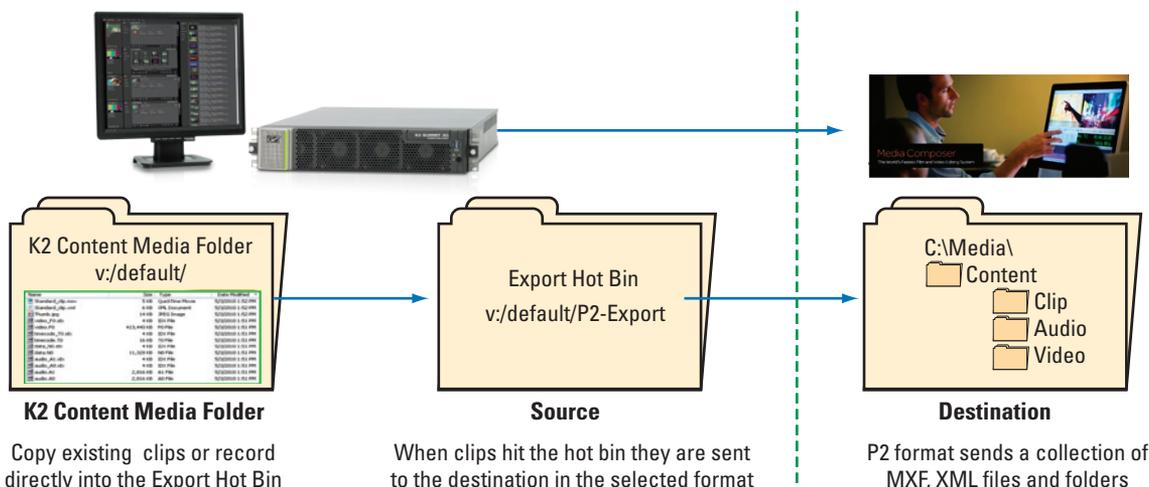


Figure 3 – K2 HotBin service for export in P2 format.

## EXAMPLE WORKFLOWS: K2 INTERCHANGE SERVICES (CONT.)

### XML Import

An extension of the HotBin concept, XML Import is a K2 system software service that permits a customized import function with a user-defined XML file. This enables clips to be stored on a centralized file system with a range and type of audio, video, and data tracks, but import them into a K2 system with just a subset of the video, audio, and data tracks. With this software utility, third parties can determine what is the desired structure of a media file as determined by XML descriptors. This can be very useful for interactions with content management systems and archives.

The watched folder is any standard file system directory that can be recognized by the Windows operating system. Media is transferred to the directory using a third-party application. After all the designated media files are transferred to the watched folder, the third-party application then transfers an XML file to the watched folder. This XML file defines the media files and specifies how they are to be assembled to create a K2 clip. When the XML file is completely transferred to the watched folder, the service validates the XML file to make sure it has the proper structure. If the XML file is valid, the service then assumes the necessary processing to create the clip in the K2 media storage.

### SUMMARY

The K2 media platform supports a diversity of media transfer workflows, with manual and automated choices. Combined with broad support for mainstream file formats and networked environments with shared access to content, this makes K2 a versatile and efficient platform for broadcast applications integrated across the nonlinear media production chain.

### REFERENCES

K2 Media Platform System Guide

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The new Grass Valley keeps broadcasters, content owners, and service providers future-ready as they navigate the changing landscape of television. With the most comprehensive collection of workflow solutions in the industry, Grass Valley delivers end-to-end television production and content distribution workflows that enable the efficiency and flexibility broadcasters need to stay competitive today—while offering technological foresight they need to keep pace with consumers' desires for more content on more devices. Grass Valley, headquartered in Montreal, leverages the collective expertise and depth of the Grass Valley Group and Miranda Technologies, each having been acquired by St. Louis-based

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