Datasheet

K2 Dyno

Replay System

K2 Dyno Replay System

K2 System Infrastructure

K2 Dyno Production Assistant

The Grass Valley K2 Dyno Replay System is a comprehensive set of live production replay tools that are seamlessly integrated for use in file-based production environments. With its operational simplicity and IT-friendly implementation, the K2 Dyno Replay System dramatically expands the possibilities for live production. With hundreds of systems in use, the K2 Dyno Replay System has been established as a leading solution for production teams covering all types of live broadcast events.

Developed in collaboration with leading replay operators, the K2 Dyno Replay System from Grass Valley, a Belden Brand, delivers an exceptional user experience and is a powerful, cost-effective, and easy-to-use instant replay and highlights generation system for HD, SD, 3G and UHD/4K productions.

Teamed with K2 media servers and storage infrastructure, and GV STRATUS nonlinear production tools, the K2 Dyno Replay Controller is superb for traditional live events such as sports and concerts, but is also being used as a direct replacement for videotape operations in studios, news, and any application that requires quick access to recorded media. The K2 Dyno Replay System is the first to be optimized for complete file-based production with networking, file wrapping, file transfer bandwidth, and metadata integration as standard features.

Using the K2 infrastructure, K2 Dyno systems can be deployed in a variety of configurations depending on user requirements. Complete Grass Valley replay solutions are scalable for additional channels, bandwidth, and storage capacity. The use of modern technologies also enables easy end-to-end integration with other systems such as advanced editing applications such as EDIUS and the powerful RT Software tOG graphics/telestration system.

With optimized AnySpeed technology, K2 Dyno has the ability to deliver the smoothest playback at any speed from 0 to 200 percent for slow-motion acquisition at high frame rates. This dramatically expands the ability to tell a compelling story during replays.

Going beyond standard support for 4K acquisition and playback formats, K2 Dyno incorporates DynoZoom pan/scan functionality, which is also available for 3X 1080p and 6X 1080i. DynoZoom enables high-quality real-time scaling and HD extraction for both real-time delivery and replay needs, while maintaining pristine image quality.

In hundreds of installations around the world, K2 Dyno delivers speed of operation, minimizes operator errors, and relies on the K2 foundation that guarantees on-air channels never drop a frame.

K2 Dyno Replay System

The K2 Dyno Replay System is a complete solution that addresses file-based live production requirements before, during, and after events. It is the first replay system to be optimized for complete file-based production with networking, file wrapping, file transfer bandwidth and metadata integration as standard features.

Streamlined Ease-of-Use and Operations

The K2 Dyno Replay System was developed with extensive operator input to be an easy to use instant replay and highlights generation system for SD, HD, 3G and 4K with pan/zoom technology, as well as high-speed frame rate productions with Grass Valley's LDX camera systems. While K2 Dyno is superb for sports and other traditional live events, it is also being used as a direct replacement for videotape operations in studios, stadiums, and other applications.

Speed and ease of operation are critical for live events, and K2 Dyno enables professionals to easily maximize their productivity without requiring extensive training. The full-featured and easy-to-learn ergonomic K2 Dyno S Replay Controller is tuned for the on-air operator to perform instant replays, input switching, fast playlist creation, shot box operation, and previewing. Operator errors are minimized with a workspace that includes a full-color, gesture-based, touchscreen interface, dimmable backlit full-spectrum color buttons, audio monitoring, thumbnail icons for clips, as well as channel status displays in a VGA multiviewer and on SDI monitor outputs. Expanded operation is enabled by adding one or two standard DVI monitors to the K2 Dyno S Replay Controller. This "power screen" gives enhanced and dynamic control over operations such as playlist creation, and content management before, during, and after events.

These tools provide the operator with easy ways to quickly mark key actions, and generate on-the-fly highlights. Extensive content management functions such as search, browse, and move make it easy to play out selected clips directly, or create sophisticated playlist packages. Playlists can include effects which will each play out on either of the two playout channels.

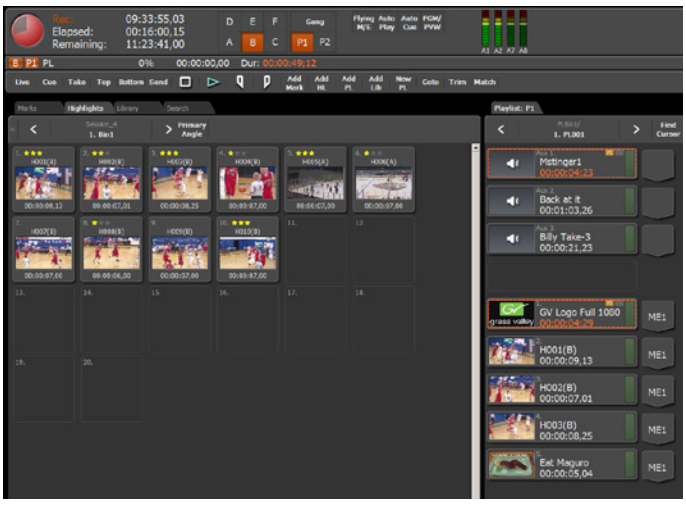
File-based Integration

In file-based production, being able to manage material and enhance it for re-use is increasingly important. With the K2 Dyno Replay System, operators can create metadata layouts off-line in advance of an event to tag information such as names and action types. This metadata can be easily distributed and imported as XML data on a USB drive. Clips can be given text names, and text metadata can be added during the event along with ratings and icons. All metadata created is saved with the clips and used from session to session or system to system. Content can be searched for and aggregated into different bins to be sent to removable storage or network destinations.

Integration with GV STRATUS nonlinear production tools permits modification and contribution to the metadata tags from a remote location, as well as rules-based transfer of content to an unlimited number of locations. Grass Valley also offers K2 Dyno Production Assistant (PA), a content management toolset to manage the records, metadata, highlights, and playlists for multiple K2 Dyno Replay Systems.

KEY FEATURES

- Affordable SD, HD, 3G and 4K replay system for file-based live production
- The DynoZoom tool allows for pan/zoom functions to be applied to high frame-rate camera systems including 3X 1080p, 6X 1080i and 4K
- Utilizes K2 Summit 3G or K2 Solo 3G media servers:
  - Standard networking and storage connectivity for import/export
  - Built-in VGA multiviewer and SDI video monitoring
  - Up to 8 channels in a 2 RU K2 Summit 3G server
- Intuitive, ergonomic, and easy-to-use controller:
  - Color touchscreen display and multicolor buttons
  - Precision control jog/shuttle knob
- Highlight, marks, and multiple pause point creation
- Separate name, tag, rating and in/out points for each clip angle
- Integrated metadata through all production phases
- Playlists with mix effect transitions per playout channel
- Fast, real-time editing of playlists
- Build to music or voiceovers using auxiliary audio tracks
- Split A/V feature extends audio or video transitions across joined clips in playlists
- Playback speed, effects and pause per clip
- Built-in audio/video monitor tool
- Audio level controls for clips and record/play channels
- Simple editor integration with edit-in-place or file transfer of content
- K2 Dyno Replay System content management provided by GV STRATUS nonlinear media production tools
- Multiple K2 Dyno S Replay Systems can share resources either with ShareFlex peer-to-peer mode or with a K2 SAN



Sample K2 Dyno S Replay Controller DVI output screen – the "power screen"

Editing System Integration

Editing systems can be easily integrated with the K2 Dyno Replay System. Editors can be network connected and content moved via simple file transfers; or an editor can be directly connected for edit-in-place operation. In this way, live feeds can be edited while they are still being recorded, and packages quickly made ready for playout. Transferred files can be wrapped with MXF or MOV, so content can easily be shared with editors, archives, and other storage systems with no special equipment or processes.

Comprehensive integration with EDIUS permits the K2 Dyno S operator to run the application directly on the control surface. Access to the recorded K2 Summit 3G content, as well as highlights and playlists created by the replay operator, provides quick turnaround and a superior level of editing-in-place. The project can be exported as a clip from EDIUS directly back to the K2 Summit 3G for play-to-air.

Built-in video monitoring delivered to the K2 Dyno touchscreen is enhanced with audio monitoring through the headset port on the back of the controller.

Optimized Replay

By implementing Gigabit Ethernet networking, common file wrappers, continuous FTP bandwidth, and standard IT storage connectivity, K2 Dyno eliminates the need for costly software and hardware add-ons to manage and move content through media production environments.

The K2 Dyno Replay System is optimized for a variety of live event productions. Its core offering consists of instant replay and high-quality slow-motion. With the ChannelFlex software option (see below), 3X super slow-motion HD cameras (such as the Grass Valley LDX HiSpeed 3X camera) can be used as inputs. Single systems can support one or two HD channels of super slow-motion, including 1080p.

The DynoZoom tool allows for pan/zoom functions to be applied to high frame-rate camera systems including 3X 1080p, 6X and 4K.

Integration with the Grass Valley LDX XtremeSpeed 6X cameras provides ultra-high frame rate acquisition for fast action applications.

K2 Summit 3G in combination with a high-resolution version of the LDX (scheduled for future release) can support a 4K workflow including pan/zoom technology on the K2 Dyno S Replay Controller surface.

K2 Summit 3G and K2 Solo 3G integrate the latest high-performance storage, but can also use removable storage solutions as simple as USB drives and off-the-shelf NAS systems mapped as network drives.

K2 Summit 3G, K2 Solo 3G and the K2 Dyno S Replay Controller all operate with an embedded operating system for high reliability. Embedded security measures are in place to protect from viruses and other issues without the need to scan all files. There is an integrated multiviewer for efficient monitoring of all channels.

The K2 Dyno S Replay Controller can be used with K2 Solo 3G for systems with smaller channel counts. All the same capabilities and options are available but with fewer channels and an even smaller form factor, which provides outstanding HD affordability.

Sample K2 Dyno S Replay Controller touchscreen

The ChannelFlex option for K2 Summit 3G and K2 Solo 3G brings expanded functionality to the K2 Dyno Replay System. This is a software option that is enabled through AppCenter Elite — a K2 control application. All capabilities are enabled with a single software license. All necessary hardware connections and controls are already in place.

Further K2 Dyno Replay System configurations can be made with K2 Dyno S Replay Controllers on a K2 SAN. This provides operators with a true shared environment for collaboration of highlight bins, playlists, and record trains along with channel control.

With additional licenses, hardware add-on, and using SSD drives, K2 Dyno S can also support 6X ultra frame rate production in both 720p and 1080i as well as UHD/4K record and playback that includes integrated K2 Dyno pan/scan DynoZoom technology.

There are three primary additional operational modes that ChannelFlex provides:

- Operation with increased I/O counts:
  - 5 records and 2 playout configuration with K2 Summit 3G
  - 6 records and 2 playout configuration with K2 Summit 3G
  - 2 records and 1 playout configuration with K2 Solo 3G
- Operation with super slow-motion sources:
  - 3X and 6X super slow-motion inputs
  - 1 super slow-motion input, with up to 3 standard inputs, and 2 outputs with K2 Summit 3G
  - 2 super slow-motion inputs and 2 outputs with K2 Summit 3G
  - 1 super slow-motion input, and 1 output with K2 Solo 3G
- Operation for 4K:
  - Synchronized top left/right or bottom left/right in a single channel
  - 1 4K input and 1 4K output with K2 Summit 3G

K2 System Infrastructure

The power behind K2 Dyno is the Grass Valley K2 series, the most extensive and flexible line of media servers, storage, and integrated playout devices in the industry. Leveraging open-standard IT components and technologies, the K2 platform brings the benefits of mainstream computer industries to the broadcast enterprise — including the latest advances in processing power and storage capacity.

The K2 infrastructure provides a flexible and robust platform for ingest, editing, clip store, replay, and playout. Systems can easily scale up for capacity, channels, and guaranteed bandwidth — delivering unmatched longevity and eliminating the need for significant repeat investment.

The K2 Dyno Replay System is tightly integrated with the K2 Summit 3G and K2 Solo 3G media servers, and uses a modern architecture uniquely suited to fulfill the needs of file-based production. K2 Summit 3G and K2 Solo 3G are proven solutions in compact 2 RU form factors, and as a foundation, greatly enhance the K2 Dyno Replay System feature set. K2 Summit 3G and K2 Solo 3G integrate the latest high-performance storage, but can also use removable storage solutions as simple as USB drives and off-the-shelf NAS systems mapped as network drives.

Formats and resolutions can all be changed on a channel-by-channel basis without a hardware reboot. Standard industry formats such as DV-CPRO, AVC-Intra, DNxHD and XDCAM are supported. All formats and resolutions can be played back-to-back on a single channel with automatic up/down/cross and aspect ratio conversion. A standard system supports up to four channels in any combination of recording or playback. The ChannelFlex software option provides additional flexibility to be used in configurations such as 4 record/2 play, or 6 record/2 play (license enabled). All input angles are immediately accessible for use in replay and highlight creation. With ChannelFlex, input or output video streams can also be synchronized for left-eye/right-eye 3D production — all in a single channel.

K2 can be configured as a shared storage platform which is comprised of one or more K2 Summit SAN-attached clients connected to one or more K2 media servers and K2 RAID protected storage. The K2 Summit client performs all video and audio I/O using built-in encoders and decoders. More than 100 channels can be attached to the K2 media servers and RAID system. For its part, the K2 media server manages the file system and controls file transfer protocol (FTP) operations. K2 storage offers options for internal drives or external RAID systems that can scale to more than 50 terabytes.

This foundation also provides the means for multiple systems to share resources. K2 Dyno is the only system available that can operate on a true SAN architecture. Every user can have instant access to all the highlights, playlists, and record channels of all the replay systems connected to shared storage. However, a SAN implementation may not be suitable for all replay environments.

A core aspect of system connectivity is provided by Gigabit Ethernet connectivity. This can be used for streaming or file transfers of recording channels and clips to be shared not only by other replay systems, but by connected storage devices. K2 Dyno systems can be networked together and used with networked sharing of media and record channels. In this ShareFlex mode, highlight clips can be instantly shared between systems. An operator of one replay system can view recorded content, make a clip from a record channel, load and play back a clip, retrieve content from the library, and place a clip in a local playlist.

KEY FEATURES

- Two- or four-channel configurations:
  - SD: DV, IMX and MPEG-2 I-Frame & Long GOP
  - HD: DV, XDCAM HD, XDCAM EX, MPEG-2 I-Frame & Long GOP, DVCPRO HD, AVC-Intra and DNxHD
- Play different formats back-to-back:
  - SD and HD clips
  - 720p/1080i/1080p
  - DV/MPEG/AVC-Intra/H.264 /AVCHD
- Optional low-resolution proxy encoding for streaming monitor and distributed workflows
- Instant replay capability
- ChannelFlex option — part of AppCenter Elite:
  - Multicam mode
  - Super SloMo mode
  - 3D mode
  - Video+key mode
  - HD/SD-SDI monitor output with timecode burn-in and custom text overlays
  - Multiviewer monitor mode with custom text overlays
- iSCSI or Fibre Channel connection to K2 SAN shared storage
- Built-in mix effects on each channel:
  - Video dissolves and audio crossfades supported via APIs and AppCenter Pro playlist
- Fast boot times with embedded OS on mSATA solid state drive (SSD)
- Option for up to 10.8 TB of internal hard disk storage
- Import/export all formats as MXF OP1a, SMPTE 360M (GXF) or QuickTime
- File system enables edit-in-place of QuickTime files

KEY FEATURES K2 SOLO 3G PORTABLE SERVER

- Small form factor: ½ rack width, 2 RU high
- Two bidirectional channels with DV and MPEG-2 support
- AVC-Intra 50/100 support is available
- DNxHD 145/220 support is available
- Up to 45 hours of SD DV25 storage and 25 hours of HD storage (XDCAM HD 50) on hard disk
- Simultaneous high-resolution and low-resolution proxy encoding
- Instant replay — record-to-play in less than ½ second
- AppCenter Pro comes standard
- ChannelFlex-compatible with AppCenter Elite:
  - Multicam mode
  - Super SloMo mode:
  - 3D mode
  - Video+key mode
- HD/SD-SDI monitor output with timecode burn-in and custom text overlays
- Multiviewer monitor mode with custom text overlays
- Built-in mix effects within a single play channel
- Fast boot times with embedded operating system on CompactFlash media
- QuickTime-compatible file system for edit-in-place with Final Cut Pro 7, EDIUS and other NLEs
- Integrated control operation with Grass Valley production switchers

K2 Dyno Replay Systems using K2 Summit 3G Clients with Internal Storage (in hours*)

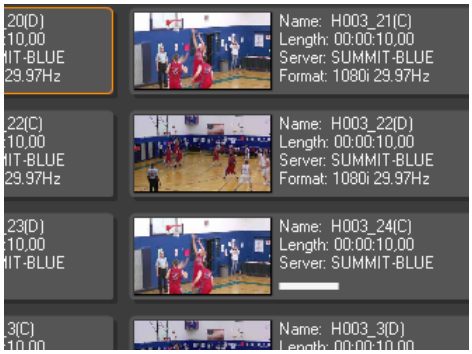
Format Data Drives	DVCPRO	DVCPRO 50	DVCPRO HD	IMX 30	XDCAM HD	XDCAM HD
600 GB RAID-1 (6/6)	240	120	60	207	183	132
600 GB RAID-0 (12/0)	480	240	120	414	366	264
900 GB RAID-1 (6/6)	360	180	90	310	275	198
900 GB RAID-0 (12/0)	720	360	180	621	549	396

RAID-1 = 6 data drives and 6 parity drives. RAID-0 = 12 data drives

* Time for video with four 16-bit audio channels, no ancillary data. Times are estimated and can vary by ±10%.

K2 Dyno Production Assistant

K2 Dyno Production Assistant is a software platform for managing content for live event productions. Content from multiple K2 Dyno Replay Controller systems, K2 production clients and other storage systems can be reviewed, modified and transferred in an easy and intuitive manner.



The Grass Valley K2 Dyno Production Assistant (PA) software provides a toolkit and user workspaces for creative personnel to manage content during live events. The system is completely scalable for virtually any number of ingest/replay channels, content destinations, and production staff. The underlying infrastructure for recording, store, and replay is provided by K2 production clients. Therefore, while the software solution can add enhanced capabilities when integrating K2 Dyno Replay Control systems, it can be used for other live production tasks when the replay controllers are not present as well.

As with the K2 Dyno Replay Controller, this software product is intuitive and easy to use. The focus is on production roles rather than having an operator tied to a particular device. In this way production companies can draw from a wider pool of production personnel. This flexibility permits a more diverse, or smaller number of personnel to perform required tasks which are vital for the production of smaller events. Many live event productions face tight budget constraints, while at the same time there is an increased need to quickly re-package and re-use event content.

Therefore, K2 Dyno PA is a solution that can perform background tasks and offer various interfaces to review, log, modify, augment, transfer and package content in a unified manner.

K2 Dyno PA is based on a software services platform. The software platform is deployed on a basic server with Gigabit Ethernet connectivity. The platform can support scenarios where a single client provides a global point of control as well as multiple clients deployed to directors, media managers, or editors with individual workspace layouts tailored to their specific needs.

Content Management

K2 Dyno PA doesn't just provide content management capabilities after a production, it can also pre-produce content during a live event. Utilizing the standard networking capabilities of the K2 system, K2 Dyno PA can enable a single user or multiple users to view all assets across distributed K2 clients, as well as K2 Dyno Replay Controller systems. Media can be browsed and transferred. Users can ingest, manage, tag and collate media for ease of use and greater efficiencies. While the user is performing a logging or replay task, the application can execute rules for moving content. Users can aggregate and create highlights and playlists to be offered for playout, having access to media across the entire network.

Key to the content management aspects of K2 Dyno PA is control over metadata collection and its application in different productions. By expanding on the metadata captured from K2 Dyno Replay Controller system operators, K2 Dyno PA provides the tools for users to capture and add structured metadata and associate it with media. K2 Dyno keywords can be changed, and markers made on clips can be shared and used in the K2 Dyno PA application. By using K2 Dyno PA, highlights created by any operator can be seen and transferred.

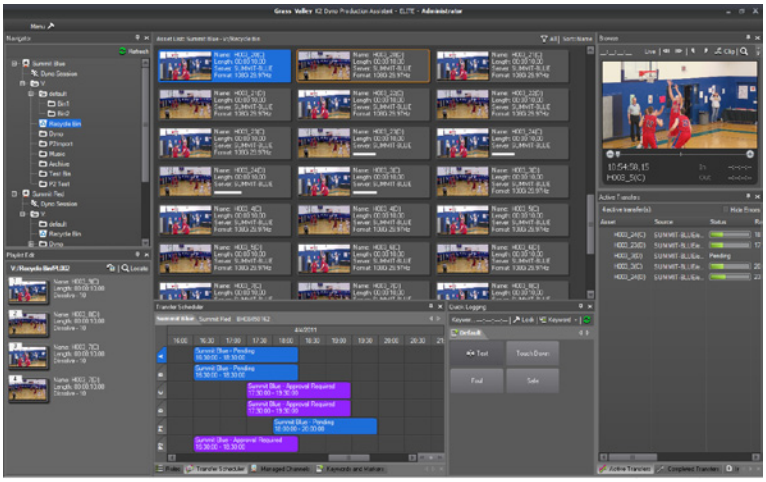
K2 Dyno PA supports production-specific metadata tagging. In the pre-production stage metadata grids can be created and pushed out to all operators to ensure consistent, complete and efficient tagging.

K2 Dyno PA can direct assets to specified storage destinations. Content can be aggregated and transferred to fixed network locations or removable media to be used for post production or archive. K2 Dyno PA makes this job simple and allows users to collate media, and set basic network rules that will automatically move media and metadata to designated points during the production. It is also possible to schedule transfers at set times. With K2 Dyno PA, organizing and managing media is made simple.

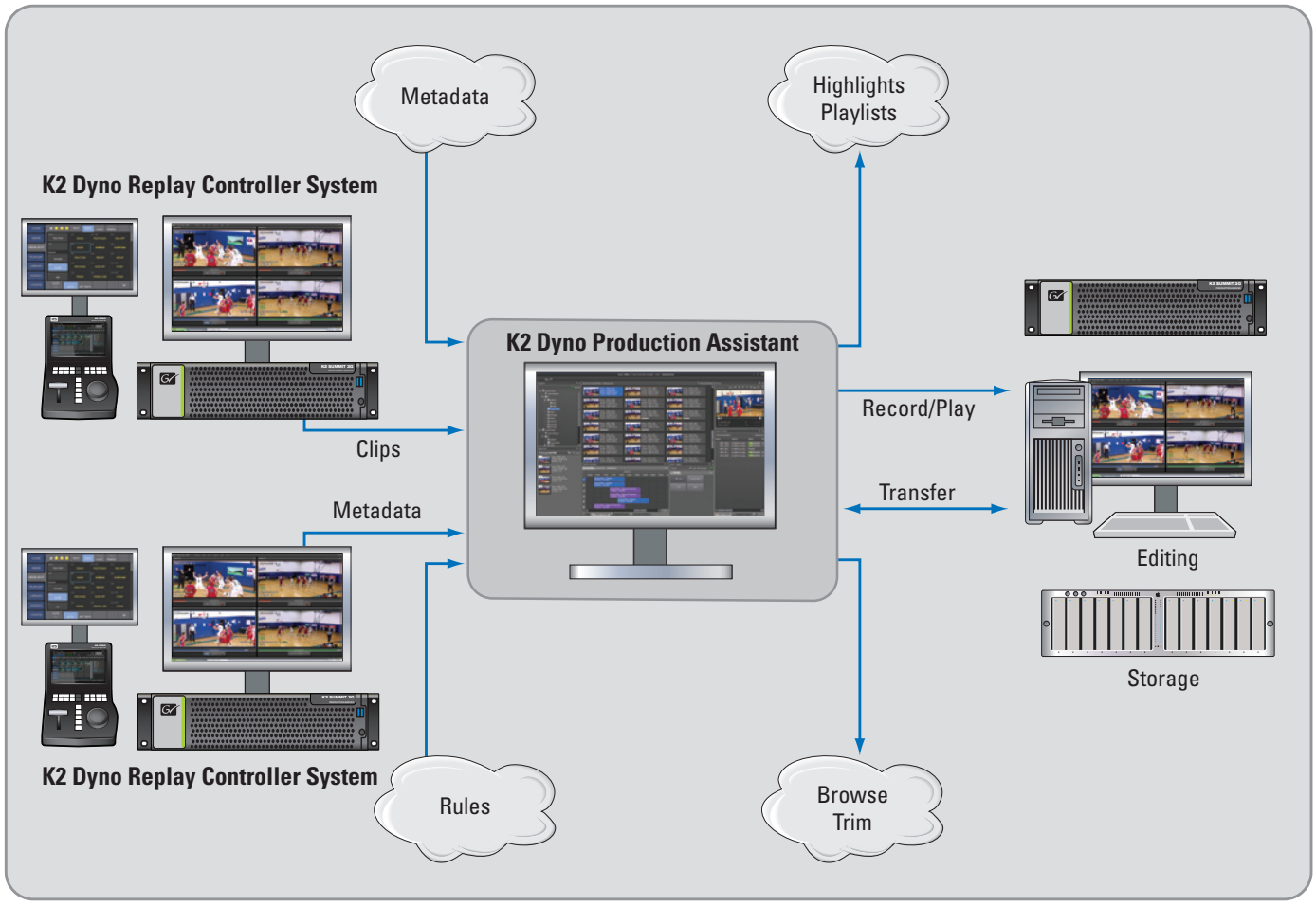
In addition, K2 Dyno PA can create new media by reviewing and sub-clipping existing highlights, or defining new highlights from incoming recordings. K2 Dyno PA can also assemble material as playlists ready for playout.

K2 DYNO PRODUCTION ASSISTANT INTERFACE

- Toolbar for quick access to all functions
- Explorer for viewing, navigating, filtering, and searching
- Lists with text and thumbnails to display content
- Playlist creator and manager
- Logging, adding, and modifying metadata
- Controls for server ingest and playout channels
- Rules creation of background tasks
- Content sharing of all material on the network
- Export and transfer of content to destinations including editors



Workflow Components



SPECIFICATIONS

Computer Platform and Client PCs

- **Processor:** Intel Core 2 Dual Core 2.0 GHz (Quad core recommended for AVC-Intra playback)
- **Memory:** 2 GB
- **Display:** Integrated or discrete graphics with 256 MB of memory
- **System Drive:** 80 GB 7,200 RPM SATA
- **Network:** Gigabit Ethernet

Application

- Windows XP SP3 32-bit or Windows 7 32-bit/64-bit
- Platform supporting multiple live production content management clients. Clients can provide content management, browsing, channel control, logging, metadata handling, transfers, clip and playlist creation.

ORDERING INFORMATION

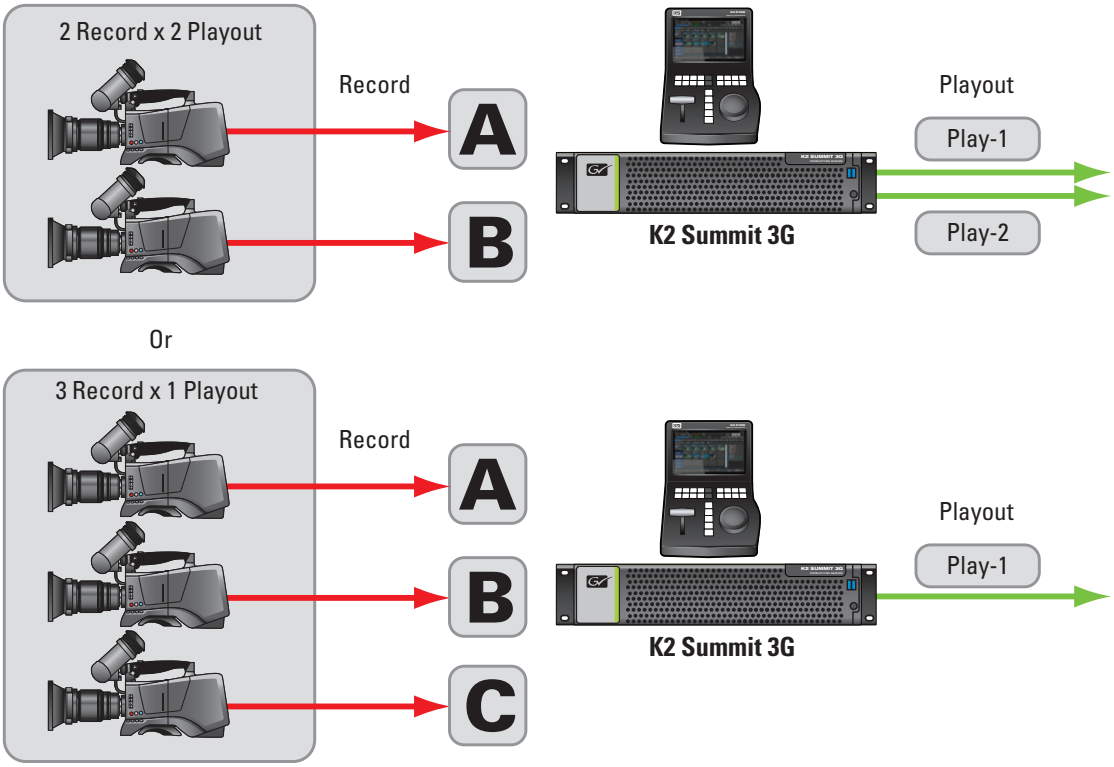
K2-DYNO-PA-EXPRESS
Live Production Content Management software for performing basic content management such as tagging and manual transfers

K2-DYNO-PA-PRO
Live Production Content Management software including playlist creation, browsing, channel control, and SAN connectivity

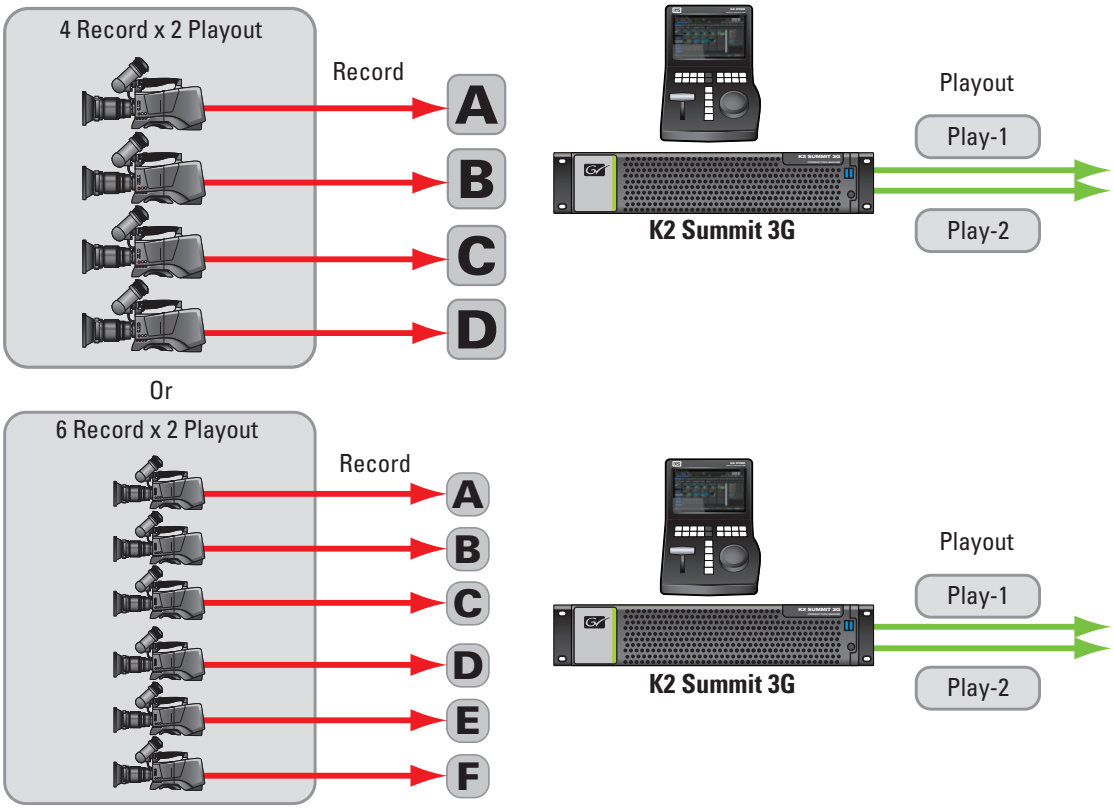
K2-DYNO-PA-ELITE
Live Production Content Management including editor export, rules-based transfers, and scheduled transfers

K2-DYNO-PA-TRIAL
Live Production Content Management software 30-day trial license

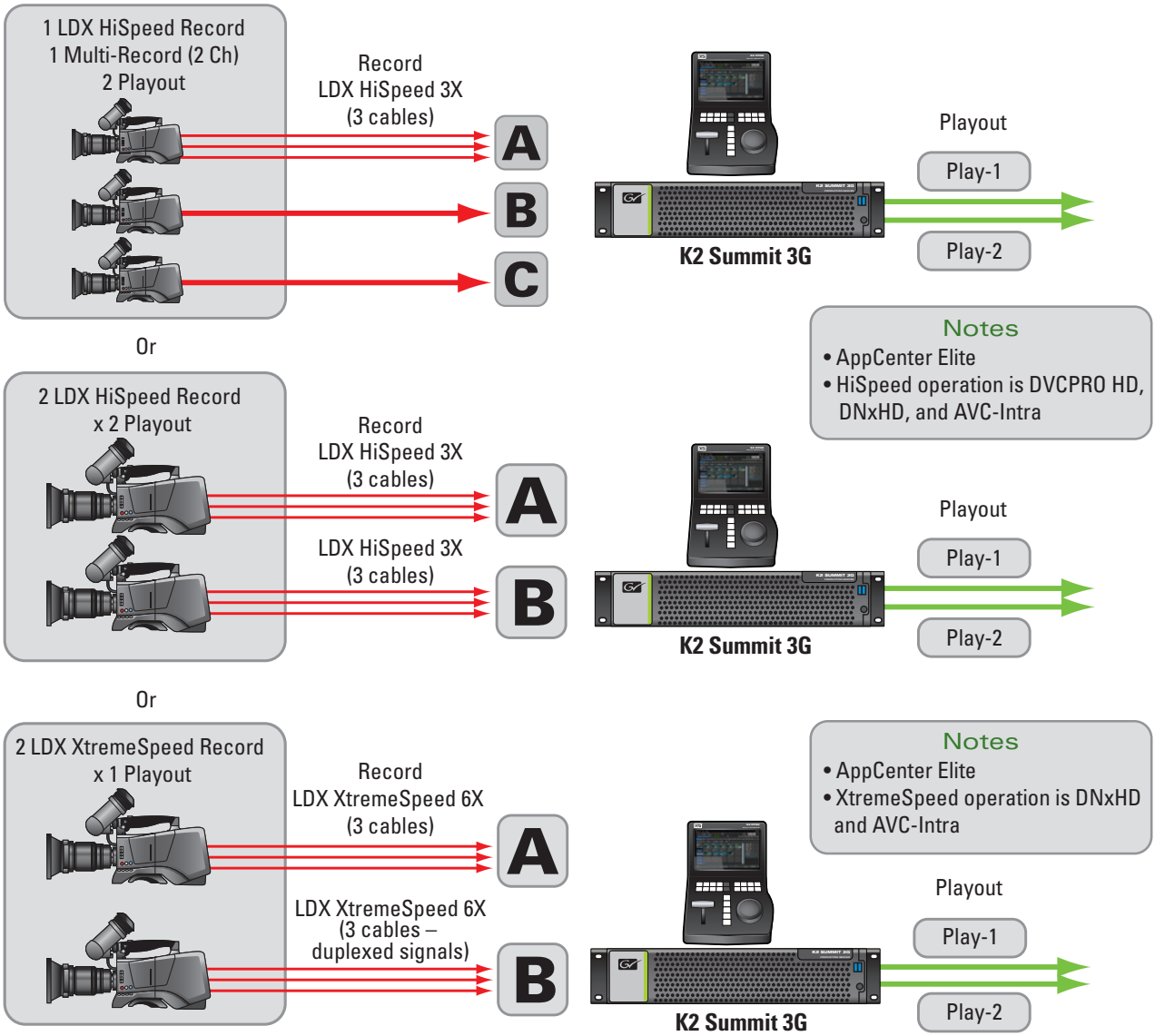
Standard Configurations for K2 Dyno with K2 Summit 3G



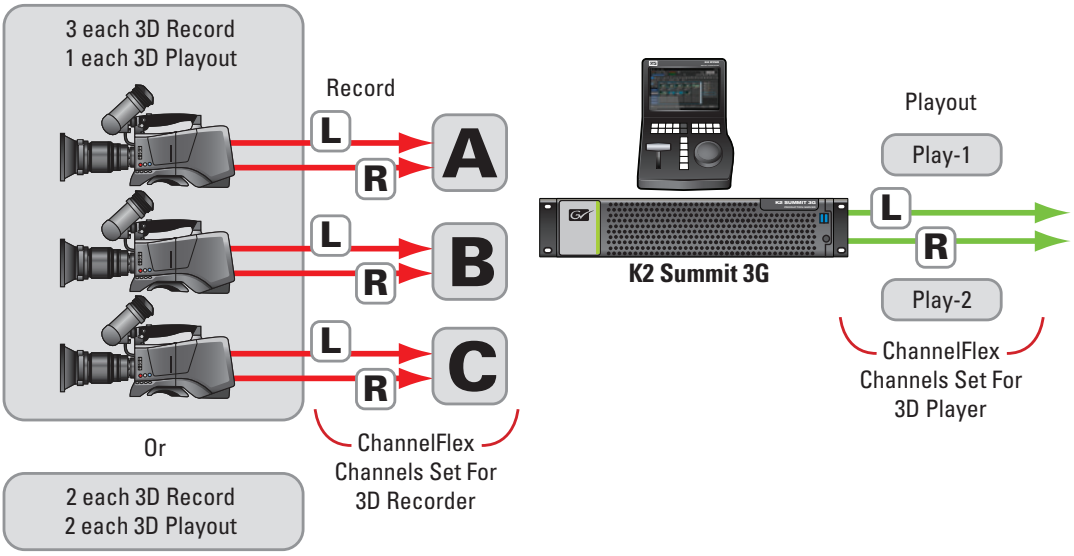
K2 Dyno Multi-input Configurations with ChannelFlex and K2 Summit 3G



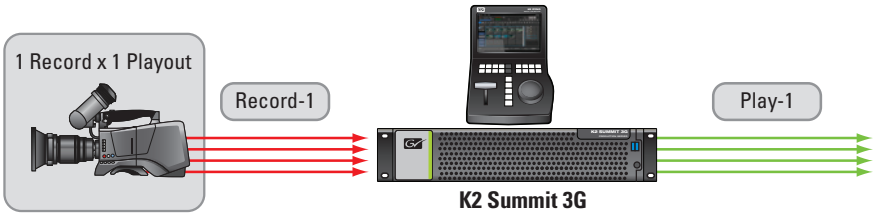
LDX HiSpeed (3X speed) and LDX XtremeSpeed (3X and 6X speed) K2 Dyno Configurations with ChannelFlex and K2 Summit 3G



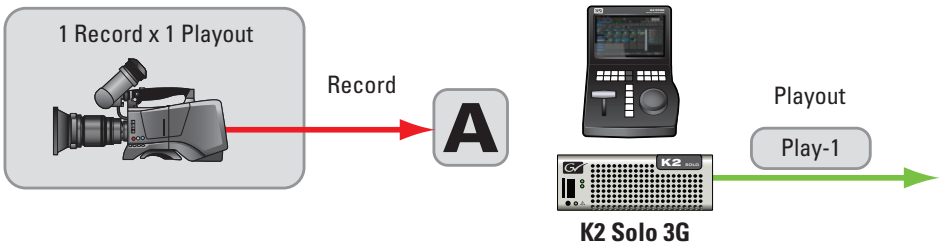
3D K2 Dyno Configurations with ChannelFlex and K2 Summit 3G



UHD/4K K2 Dyno Configurations with ChannelFlex and K2 Summit 3G

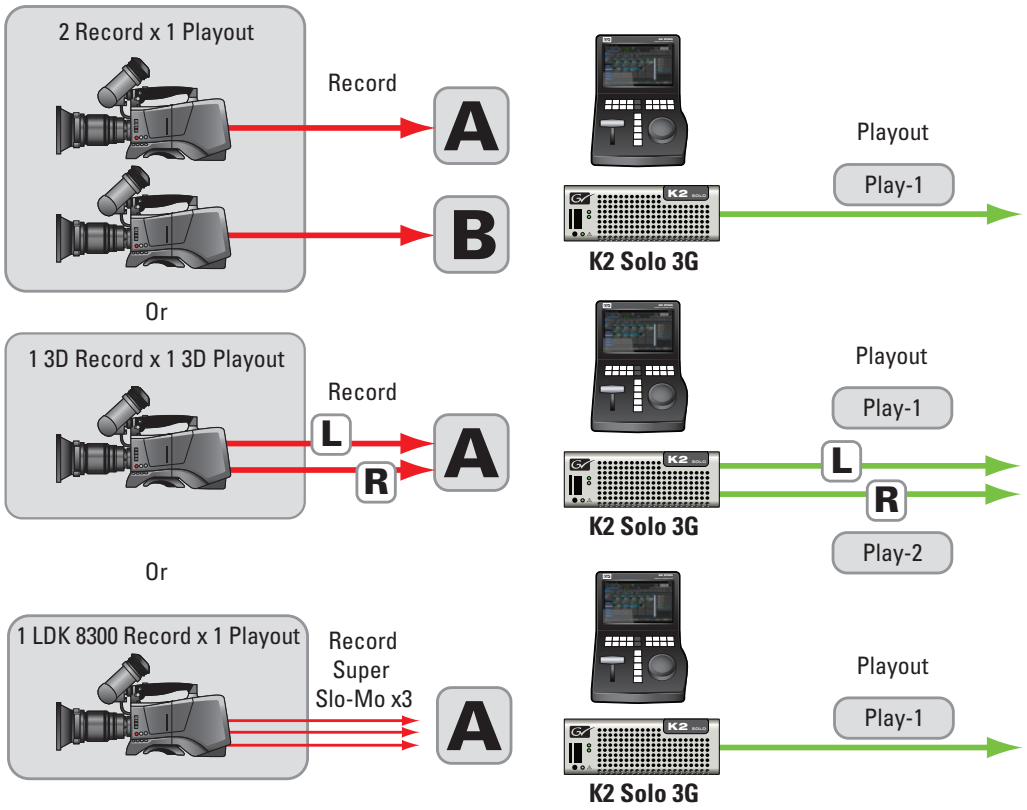


Standard Configurations for K2 Dyno with K2 Solo 3G

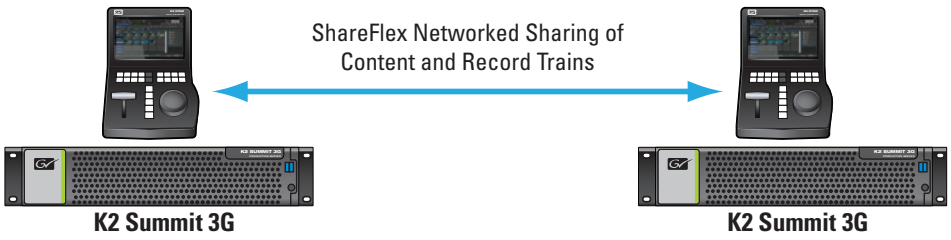


K2 DYNO CONFIGURATIONS

Additional K2 Dyno Configurations with ChannelFlex and K2 Solo 3G



K2 Dyno Network Sharing of Content



- Share highlight clips between systems
- View recorded content on a different K2 Summit 3G system locally
- Make a clip from another K2 Summit 3G's record train
- Load and play back a clip from another K2 Summit 3G
- Retrieve content from the library of a connected K2 Summit 3G
- Place a clip in a local playlist from another K2 Summit 3G

SHAREFLEX KEY FEATURES

FEATURING
CHANNELFLEX®
AND
SHAREFLEX™

- Share highlight clips between systems
- View recorded content locally on a different K2 Summit
- Make a clip from another K2 Summit's record channel
- Load and play back a clip from a different K2 Summit
- Retrieve content from the library of a connected K2 Summit
- Place a clip in a local playlist from another K2 Summit

GLOBAL SERVICES

Effectively including servers, storage, and media I/O within a complete live, playout, or news solution depends on meeting specific workflow and media infrastructure needs. This includes configuring the individual products to function as a solution; integrating with third-party control, management, operations, and business systems; and meeting the bandwidth, transfer, and format flexibility requirements of today's complex media environments. Grass Valley Global Services provides the expertise and experience to help media professionals define requirements, design solutions, and implement world-class, file-based facilities.

Professional Services

System functionality and performance tuning requires understanding user requirements. The ability to specify technical needs, required interfaces, bandwidth, and workflow needs requires an in-depth knowledge of both the technology and the environment. Grass Valley Professional Services includes systems engineers with among the world's highest level of expertise. However, project success requires more than technical knowledge. To complete the picture, Grass Valley provides expert project management to capture specifications, plan resources, schedule, and budget. The combined professional services team has the competencies and experience to insure a successful implementation.

Commissioning

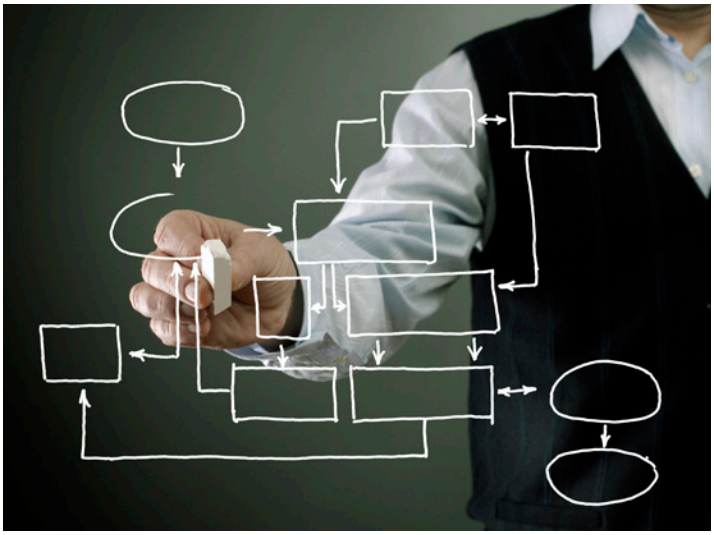
Grass Valley insures the best use of K2-based systems by personally handling the initial setup and commissioning. Field engineers have the experience, knowledge, and skills necessary to bring a variety of systems to life — both as product sets, and in the broader context of complete solutions.

Training

Operational and technical training set the foundation for success. Our trainers are experienced in broadcast and in the operational and technical nuances of different K2-based deployments. On-site training is available to bring users up to speed as quickly as possible.

Support Agreements

Uptime, risk, and financial predictability are the hidden variables in total cost of ownership. The ability to manage these is what makes support agreements cost-effective tools for business optimization. Recording, playback, and playout equal revenue: downtime, missed commercial spots, slow performance, and playout errors have severe financial impacts. Elite Support Agreements are designed for these critical environments where very high uptime and quick problem resolution is required. They provide 24x7 technical phone support, call center prioritization, service level objectives, software updates/upgrades, and advance parts exchange. Elite Support Agreements insure that users have both operational efficiency and financial predictability.



GLOBAL SERVICES PROVIDES:

- Unequalled depth of industry knowledge, and technical expertise
- Over 50 years of worldwide experience
- Complete set of services:
  - Strategic advice
  - System architecture
  - Workflow analysis and design
  - Project management
  - Integration and implementation
  - Performance optimization
  - Technical and operational training
  - Educational services
- Address today's challenges and prepare for tomorrow's opportunities

K2 DYNO S REPLAY CONTROLLER SPECIFICATIONS

General

Power:

- 90-265 VAC, 47-63 Hz
- Typical power consumption: 60 Watts

Dimensions: depth = 383 mm (15.1 in.); width = 245 mm (9.7 in.); height = 164 mm (6.5 in.) (All approx.)

Weight: 4.75 kg (10.45 lbs.)

Temperature range:

- Operating: 0°C to 40°C (32°F to 104°F)
- Storage: -20°C to 60°C (-4°F to 140°F)

Humidity range: 10% to 90% (relative humidity)

Application

Highlight clips: highlight clips are easily created from marked points

Playlists: highlight clips placed into playlist can be moved (drag-and-drop) while playing, and the camera angle can be changed as well

Playlists with transitions, mixed effects: M/E transitions are dissolves or fade to matte between highlight clips. Transitions are executed using only one channel of playout

Metadata and keywords: metadata and keywords can be input with each highlight or marked clip. Easy to edit-in-place keyword tool. Keywords exported with saved user configuration. This information can be text searchable

Favorites bar: store clips, playlists, or access networked folders quickly through a "slide" bar available with a finger gesture

Front Panel

Buttons: Full color spectrum, fast response time, 23 buttons, 43 shift and function capabilities

Slow motion lever: Grass Valley Karrera switcher T-bar, full range variable -1000 to +1000 speed

Jog, control knob: 60 mm, custom design, rubber encased light-weight aluminum core with tactile relief, fast jog mode up to 50X

LCD touch panel: 213 mm (8.4 in.) 800x600 resolution, gesture control enhanced

Rear Panel

Power button: momentary/standby type with protective cover

Network: 2 each, Gigabit Ethernet ports – system control with K2 Summit production client

USB 2.0 connectors: 4 each, 500 mA type connectors

USB 3.0 connectors: 2 each, 900 mA type connectors

Display ports: 2 Display Port++ each, dual support

CompactFlash slot: standard CF type – operating system

ORDERING

K2-DYNOS-ELITE-PK5

K2 Dyno S Replay Elite Package. Includes K2 Summit 3G 4-channel HD/SD server with DV, MPEG-2, AVC-Intra, and DNxHD codecs, 12 x 480 GB SSD drives in a RAID 10 configuration for storage (50 hours at AVC-Intra 1080i/720p), and K2 Dyno S Replay Controller with application software and AppCenter Elite with ChannelFlex. Supports replay configurations up to 6 camera iso-records and 1 replay out or 4 camera iso-records and 2 replay outputs (program and preview or 2 independent programs.) Also supports up to two 3X speed camera iso-records or three 2X speed camera iso-records (DV, AVC-Intra, and DNxHD codecs only).

Mezzanine FPGA for the following functions:

- Use of MPEG-2 with Multicam ChannelFlex for 1080i/720p
- Use of AVC-Intra/DNxHD with 3X super slow-motion ChannelFlex for 1080i/720p
- Use of AVC-Intra/DNxHD with 6X ultra slow-motion ChannelFlex for 1080i/720p

K2-DYNO-ELITE-PK4

K2 Dyno S Replay Elite XDCAM Package. Includes K2 Summit 3G 4-channel HD/SD server with DV, MPEG-2, AVC-Intra, and DNxHD codecs, 12 x 900 GB drives in a RAID-10 configuration for storage, and K2 Dyno S Replay Controller with application software. Also includes hardware and software to permit ChannelFlex operations with MPEG-2 formats such as XDCAM and XDCAM HD. Supports replay configurations up to 6 camera iso-records and 1 replay out or 4 camera iso-records and 2 replay outputs (program and preview or 2 independent programs.) Also supports up to two 3X speed camera iso-records or three 2X speed camera iso-records (DV, AVC-Intra, and DNxHD codecs only).

K2-DYNO-ELITE-PK3

K2 Dyno S Replay Elite Package. Includes K2 Summit 3G 4-channel HD/SD server with DV, MPEG-2, AVC-Intra, and DNxHD codecs, 12 x 900 GB drives in a RAID-10 configuration for storage, and K2 Dyno S Replay Controller with application software. Supports replay configurations up to 6 camera iso-records and 1 replay out or 4 camera iso-records and 2 replay outputs (program and preview or 2 independent programs.) Also supports up to two 3X speed camera iso-records or three 2X speed camera iso-records (DV, AVC-Intra, and DNxHD codecs only).

K2-DYNOS-ELITE-PK2

K2 Dyno S Replay Elite XDCAM Package. Includes K2 Summit 3G 4-channel HD/SD server with DV, MPEG-2, AVC-Intra, and DNxHD codecs, 12 x 600 GB drives in a RAID-10 configuration for storage, and K2 Dyno S Replay Controller with application software. Also includes hardware and software to permit ChannelFlex operations with MPEG-2 formats such as XDCAM and XDCAM HD. Supports replay configurations up to 6 camera iso-records and 1 replay out or 4 camera iso-records and 2 replay outputs (program and preview or 2 independent programs.) Also supports up to two 3X speed camera iso-records or three 2X speed camera iso-records (DV, AVC-Intra, and DNx HD codecs only).

K2-DYNOS-ELITE-PK1

K2 Dyno S Replay Elite Package. Includes K2 Summit 3G 4-channel HD/SD server with DV, MPEG-2, AVC-Intra, and DNxHD codecs, 12 x 600 GB drives in a RAID-10 configuration for storage, and K2 Dyno S Replay Controller with application software. Supports replay configurations up to 6 camera iso-records and 1 replay out or 4 camera iso-records and 2 replay outputs (program and preview or 2 independent programs.) Also supports up to two 3X speed camera iso-records or three 2X speed camera iso-records (DV, AVC-Intra, and DNxHD codecs only).

K2-DYNOS-PRO-PK2

K2 Dyno S Replay Pro Package. Includes K2 Summit 3G 4-channel HD/SD server with DV, MPEG-2, and AVC-Intra codecs, 12 x 900 GB drives in a RAID-10 configuration for storage, and K2 Dyno S Replay Controller with application software. Supports replay configurations up to 3 camera iso-records and 1 replay out or 2 camera iso-records and 2 replay outputs (program and preview or 2 independent programs).

K2-DYNOS-PRO-PK

K2 Dyno S Replay Pro Package. Includes K2 Summit 3G 4-channel HD/SD server with DV, MPEG-2, and AVC-Intra codecs, 12 x 600 GB drives in a RAID-10 configuration for storage, and K2 Dyno S Replay Controller with application software. Supports replay configurations up to 3 camera iso-records and 1 replay out or 2 camera iso-records and 2 replay outputs (program and preview or 2 independent programs).

K2-DYNOS-FLEX-PK

K2 Dyno S Replay Flex Package. Includes K2 Summit 3G 2-channel HD/SD server with DV and MPEG-2 codecs, 12 x 600 GB drives in a RAID-10 configuration for storage, and K2 Dyno S Replay Controller with application software. Supports replay configurations up to 2 camera iso-records and 1 replay out or one 2X/3X speed camera iso-records (DV codec only).

K2-DYNOS

K2 Dyno S Replay Controller for K2 Summit K2-XDP and K2 Summit 3G systems. Includes application software and hardware.

K2-DYNOS-EXPRS-PK1

K2 Dyno S Replay Express Package One. Includes K2 Solo 3G 2-channel HD/SD server with DV, MPEG-2, and AVC-Intra codecs, and K2 Dyno S Replay Controller with application software. 1/2 rack package, 10 hour storage capacity at 100 Mb/s. Includes AppCenter Elite with ChannelFlex, with carrying handle and feet for portable use. Supports replay configurations up to 2 camera iso-records and 1 replay out or 1 2X/3X speed camera iso-records (DV, AVC-Intra, and DNxHD codecs only).

K2-DYNOS-EXPRS-PK2

K2 Dyno S Replay Express Package Two. Includes K2 Solo 3G 2-channel HD/SD server with DV, and MPEG-2 codecs, and K2 Dyno S controller. 1/2 rack package, 10 hour storage capacity at 100 Mb/s. Includes AppCenter Pro, with carrying handle and feet for portable use.

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