

K2 Summit Production Client

K2 MEDIA CLIENT FOR PRODUCTION AND LIVE EVENT APPLICATIONS WITH 2/4 HD/SD BI-DIRECTIONAL CHANNELS

The K2 Summit Production Client is optimized for production and live event workflows with a combination of special features not found in any other server. Additionally it offers full support of broadcast and news workflows based on DVCPRO HD/SD formats.



The K2 Summit™ Production Client is a major enhancement to the K2 family. It is optimized for production and live event workflows as well as DVCPRO HD-based broadcast applications. Teamed with the K2 Dyno™ replay controller, it offers an ideal solution for live events such as sports, concerts, and any application that requires quick access to recorded media.

You can configure a K2 media client as part of a SAN solution comprised of multiple media clients, K2 media server, and K2 RAID storage—or deploy a standalone client with internal or external storage and built-in server for use in a distributed environment. Both the SAN and standalone systems are optimized to work in a file-based environment.

K2 Platform – Overview

The K2 platform is comprised of one or more K2 media clients connected to one or more K2 media servers and K2 RAID-protected storage. The K2 media client performs all video and audio I/O using built-in encoders and decoders. You can attach more than 100 media client channels 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.

K2 Summit Production Client

The K2 Summit Production Client is a 2 RU platform with redundant hot-swappable power supplies, redundant Ethernet ports, which runs off of a CompactFlash system drive with an embedded OS providing fast and reliable operation. Two iSCSI or Fibre Channel ports on a SAN-based K2 Summit Production Client provide a backup data path in case of failure, giving you a cost-effective way to design a no-single-point-of-failure system.

To this architecture we've added our Emmy® Award-winning core video technology. Each channel is built around a high-performance RISC processor, an embedded real-time operating system, and performs video/audio processing in the robust and secure manner needed for a 24/7, frame-accurate environment.

KEY FEATURES

- Two or four DVCPRO HD, DVCPRO 25/50, DV bi-directional channels
- Instant replay capability
- Multiple SDI outputs per channel:
 - SDI on-air output
 - SDI monitor output
- Multiviewer VGA monitor output:
 - Quad split VGA output shows all four channels live, each with timecode burn-in, audio level meters, and transport controls
- Built-in mix effects on each channel:
 - Simple video dissolves and audio cross fades supported via APIs and AppCenterPro playlist
- Fast boot times with embedded OS on CompactFlash
- Eight internal video drives (for standalone unit)
- iSCSI or Fibre Channel connection to K2-SAN shared storage
- MXF, SMPTE 360M (GXF), QuickTime file exchange
- File system enables edit-in-place of QuickTime files

PRODUCT DATA SHEET

K2 Production Features

The K2 Summit Production Client has been specifically designed for the needs of live event productions such as sporting events where instant replays need to be available immediately at the push of a button.

All channels are bi-directional and can easily and quickly switch between record and play.

Each channel has an on-air SDI output and an SDI output for monitoring. The multi-viewer monitor output displays all four output channels on a standard VGA monitor (requires AppCenterPro).

Built-in Mix-Effects

For generating quick highlight packages, often all that is required is simple dissolves or fades between two clips. Each channel in the K2 Summit Production Client has this capability built-in (most servers require two channels to do a mix effect). An integrated mixer dissolves between two clips or to a matte color. The color and transition times are user-definable.

Advanced HD Capabilities

The K2 Summit Production Client provides agile codecs enabling playback of SD or HD content seamlessly on the same timeline with any DV format (DV, DVCAM, DVCPR025/50, and DVCPR0 HD). It automatically up-, down-, or crossconverts a clip to the desired output resolution providing full support for all SD and HD formats. The K2 Summit Production Client also supports user-selectable 16:9/4:3 aspect-ratio conversion. As a result, you only need to store a single-format version of a clip in order to play it out in the appropriate SD or HD format.

Advanced Video Playback Features

The K2 Summit Production Client features smooth, high-quality, bi-directional, slow-motion playback, and enhanced jog/shuttle control. Playback trails recording by a fraction of a second so replay is virtually instantaneous. Slo-mo playback and freeze frames are jitter-free at even the slowest speeds due to the use of line interpolation technology.

Sophisticated Audio and Closed Caption/Teletext Features for Multilingual Support

The K2 Summit Production Client can record or play up to 16 embedded audio or eight AES/EBU discrete channels. Each video clip can have up to 32 compressed or uncompressed audio tracks stored on disk, each track identified by a language descriptor for easy track management and each channel can play out up to 16 different mono language tracks (track management is part of AppCenterPro).

Additional audio features of the K2 Summit Production Client include scrub audio up to 2X, audio meters for each channel, an internal audio delay capability, and the ability to adjust levels during recording or playback. It also performs an audio ramp down/ramp up between clips to eliminate audio clicks and/or pops.

AppCenterPro includes the capability to import additional audio tracks (for additional languages) to a clip and add closed captions from a third-party captioning editor for multiple languages.



Internal multiviewer output on VGA provides a quad split display of the all channels in real time (Requires optional AppCenterPro).

K2 SUMMIT PRODUCTION CLIENT STANDARD FEATURES:

- Automatic upconversion and downconversion, user-definable aspect ratio conversion, and closed caption preservation
- Configurable as SAN or standalone solution
- Standard redundant power supplies, cooling, and Ethernet ports
- Embedded operating system on flash memory
- Scales from two to four channels to more than one hundred channels in a SAN configuration
- Open-system design enables interoperability with other devices via standard protocols
- Full multi-channel audio support – 16 SDI audio tracks per video channel (32 audio tracks per clip on disk)
- Remote SNMP monitoring via NetCentral™ SNMP-based facility-monitoring software
- Security options enable protection from accidental on-air channel mistakes

K2 SUMMIT AND K2 DYN0 REPLAY SYSTEM



The K2 Dyno replay controller is a powerful and cost-effective system to address sports replay and other live events. The K2 Dyno controller offers a highly intuitive control panel and user interface, high-quality T-bar and jog knob, touchscreen display, and the ability to attach an optional VGA monitor for dual-screen operation. All of the advanced features of the K2 Summit Production Client are available through the K2 Dyno control panel including the built-in mix effects on each of the four channels, smooth slo-mo playback, and instant replay at the push of a button.

The K2 Dyno application has been optimized for a typical live event workflow and includes:

- Pre-production features for easy setup and import of previous highlights, material, setups, and graphics
- On-air features for instant replay, highlights (shotbox) creation with metadata, and playlist package with mix effects
- Post-production features for quick “melt” and take-away on a standard USB disk for editing

REAR VIEW - K2 SUMMIT PRODUCTION CLIENT



SPECIFICATIONS

Description

- 2 or 4 SD/HD channels
- All channels are bi-directional

Compression Formats – DV, DVCAM, DVCPR025/50, DVCPR0HD

Format	Frame Rate
DV/DVCAM	25, 29.97
DVCPR025	25, 29.97
DVCPR050	25, 29.97
DVCPR0HD	50, 59.94

Video Channels

- 2 or 4 bi-directional HD/SD-SDI record/play channels
- BNC, 75Ω
- SD SDI: SMPTE 259M, ITU-R601, 525/625 line component, 10-bit
- HD-SDI: SMPTE 292M, 10-bit

Monitor Output

Each channel has a secondary SDI output

Multi-viewer Output

Built-in multi-viewer displays all 4 channels on one VGA monitor

Video Playback Output

- Any supported format can be played seamlessly back-to-back
- Output can be delayed at pixel resolution within a range of one frame
- Freeze mode – frame or field
- Off-speed play – line interpolation provides jitter free slow-motion playback in both directions

Video Mix Effects

- Dissolves between two video tracks on same channel
- Fade up/down to matte color (default is black)
- Max duration per transition – user selectable

Up/Down/Crossconversion and Aspect Ratio

- 525↔1080i, 525↔720p, 625↔1080i, 625↔720p
- 720p↔1080i crossconversion
- 4:3-16:9 aspect ratio conversion with format specified on a channel basis with clip by clip override capability
- Bar, half-bar, crop and stretch options configurable via UI, AMP protocol or K2.net (native protocol)

SPECIFICATIONS (CONT.)

E-to-E Mode

- Less than one frame delay
- No re-timing applied

Audio

- Record or play up to 16 tracks per channel
- 32 audio tracks per clip stored on disk

Embedded Audio Tracks (per video channel)

16 tracks embedded

Discrete AES/EBU Audio Tracks (per video channel)

- 8 input and 8 output tracks (4 AES pairs) audio
- DB25 pin connector (optional) – Yamaha AES D-sub pinout (CD8AES & MY8AE)

Audio Specifications

- Input: 48 kHz, 16-, or 24-bit digital audio PCM
- Sample rate conversion on inputs (32 kHz to 96 kHz) to 48 kHz
- Output: 48 kHz clock derived from video reference, 16- or 24-bit
- Compliant with SD-SMPTE 259M, HD-SMPTE 292M
- Compressed audio types: AC-3 and Dolby E pass-through
- Audio delay adjustable ± 200 ms relative to output video

K2 Summit Production Clients With Internal Storage (in hours*)

Data Drives	DVCPRO 25	DVCPRO 50	DVCPRO HD (DV100)
300 GB – RAID-1	80	40	20
300 GB – RAID-0	160	80	40
450 GB – RAID-1	120	60	30
450 GB – RAID-0	240	120	60

RAID 1 = 4 data drives and 4 parity drives. RAID 0 = 8 data drives

* Time for video with four 16-bit audio channels, no ancillary data

Audio Special Features

- Scrub audio support ($\pm 2X$)
- Audio click elimination
- Agile playback of clips with different supported audio formats
- Audio tagging and audio mapping (with K2 AppCenterPro)
- Audio mix effects (PCM only):
 - Cross fade between two audio tracks
 - Fade up/down
 - Independent of video effects
 - Applicable to 8 audio tracks

Power Requirements

- Dual redundant 500W maximum, 300W typical
- Auto-sensing, hot-swap
- 50-60 Hz
- 100-240 VAC

Dimensions

- Height: 9 cm (3.5 in.) – 2 RU
- Width: 44.5 cm (17.5 in.)
- Depth: 61.6 cm (21 in.)
- Weight: 24 kg (52.9 lbs.) maximum

Environmental Characteristics

- Operating temperature: 10° to +40°C (50° to 104°F)
- Non-operating temperature: -40° to +60°C (-40° to 140°F)
- Operating relative humidity: 20% to 80% from -5° to +45°C (23° to 113°F)
- Non-operating relative humidity: 10% to 80% from -30° to +60°C (-22° to 140°F)

Redundancy

- Redundant power supplies (hot-swap)
- Redundant cooling
- Redundant Ethernet ports (control, iSCSI, FTP)

GPI

12 in, 12 out – 25-pin D connector (DB25)

Reference Genlock

- NTSC/PAL black composite analog
- Two BNC, 75 Ω passive loop through
- Burst frequency lock: PAL, +10 Hz at subcarrier NTSC, +20 Hz at subcarrier

Timecode

- LTC SMPTE 12M one per channel
- One mini-XLR per input and one mini-XLR per channel with both input and output
- 1 k Ω input impedance, 50 Ω output impedance
- One VITC reader/writer per video channel
 - Lines 10-21 on 525 configurations, lines 6-23 on 625 configurations
- Ancillary timecode

Control

Interconnects:

- Four RS-422 serial ports
- 100/1000Base-T Ethernet port

Protocols:

- BVW (RS-422) (w/o insert edit)
- Odetics (RS-422)
- VDCP (RS-422)
- AMP (RS-422 and Ethernet)
- K2.net native API

Media Exchange

MXF Op1a, GXF (SMPTE 360M), AVI (DV), and QuickTime (DV, DVCAM, and DVCPRO)

Ports

- Four 100/1000Base-T Ethernet ports
- One USB 2.0 front, two USB 2.0 rear
- One RS-422 serial port per channel
- 15-pin SVGA
- USB keyboard
- USB mouse

Remote Monitoring

Grass Valley™ NetCentral SNMP-based remote facility-monitoring software

Certifications

UL 60950, FCC Class A, EMC Class A, CE, C-Tick, CSA 60950, IEC 950, EN 60950

Included in Package

- Power cords (2)
- LTC cables (4)
- Documentation CD
- QuickStart guide
- USB stick with recover image

ORDERING INFORMATION

K2-XDP-2SD

2 RU platform with 2 bi-directional SD channels for DV25/50 record and playback

K2-XDP-4SD

2 RU platform with 4 bi-directional SD channels for DV25/50 record and playback

K2-XDP-2HD

2 RU platform with 2 bi-directional SD/HD channels for DVCPRO HD, DV25/50 record and playback

K2-XDP-4HD

2 RU platform with 4 bi-directional SD/HD channels for DVCPRO HD, DV25/50 record and playback

Options

K2-XDP-80300R0

8 300 GB 15K SAS drives for internal storage configured as 8 data and no parity drives

K2-XDP-80300R1

8 300 GB 15K SAS drives for internal storage configured as 4 data and 4 parity drives

K2-XDP-8045R0

8 450 GB 15K SAS drives for internal storage configured as 8 data and no parity drives

K2-XDP-80450R1

8 450 GB 15K SAS drives for internal storage configured as 4 data and 4 parity drives

K2-APP-PRO

K2 AppCenterPro software for advanced features

K2-XDP-AES-CABLES

AES DB25 to XLR break-out cables (2). Each cable provides 8 input and 8 output AES XLR connectors for one K2 Summit video channel

Other upgrade kits, spare parts, external storage, SAN configurations, and service options are available. Please contact your authorized Grass Valley representative for additional options.

PROFESSIONAL SERVICES

Our professional services offerings ensure optimal system performance and maximize uptime. These services include call centers staffed around the clock; system planning, design, and commissioning; professional training courses; and technical maintenance programs and service agreements.

www.grassvalley.com/support

