

K2 Summit 3G Production Client

K2 MULTI-FORMAT MEDIA CLIENT
WITH UP TO 4 HD/SD BI-DIRECTIONAL
CHANNELS

The K2 Summit 3G Production Client is optimized for a broad range of production and broadcast applications and is the only server that supports end-to-end SD/HD workflows in DVCPRO, MPEG-2, AVC-Intra, and H.264/AVCHD formats.



FEATURING
CHANNELFLEX™

The Grass Valley™ K2 Summit™ 3G Production Client is a major enhancement to the K2 media server family. It is optimized for production, live event workflows, as well as broadcast applications. Teamed with the K2 Dyno™ Replay Controller and the STRATUS™ Media Workflow Application Framework, it offers an ideal solution for live events such as sports and concerts, studio production, news, and any application that requires quick access to recorded media.

You can configure a K2 Summit 3G Production Client as part of a SAN solution comprised of multiple K2 Summit clients, K2 media servers, and K2 RAID storage—or deploy a standalone K2 Summit system with internal or external storage 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 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. You can attach more than 100 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 3G Production Client

The K2 Summit 3G Production Client is a 2 RU platform with redundant hot-swappable power supplies, as well as redundant Ethernet ports. It includes an

embedded OS that runs off of an mSATA solid state drive (SSD) providing fast and reliable operation.

To provide a cost-effective design with no single point of failure, each K2 Summit attached to a SAN offers two iSCSI or Fibre Channel ports to provide a backup data path in case of a failure.

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.

K2 Production Features

The K2 Summit 3G Production Client has been specifically designed for the needs of live event productions such as sporting events where instant replays

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, and AVC-Intra
- Play different formats back-to-back:
 - SD and HD clips
 - 720p/1080i
 - DV/MPEG/AVC-Intra/H.264 /AVCHD
- Optional low-resolution proxy encoding for streaming monitor and distributed workflows
- Instant replay capability
- ChannelFlex™ – part of AppCenter Elite:
 - Multicam mode
 - Super slo-mo 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 7.2 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

K2 SUMMIT 3G PRODUCTION CLIENT STANDARD FEATURES



Internal multiviewer output on VGA provides a display of up to eight channels in real time when used with ChannelFlex.

- Expanded internal storage capacity – 7.2 TB
- Future software-only upgrade to 3 Gb/s SDI and 1080p50/60
- Software-based codecs for agile playback and easy configuration
- Increased bandwidth to support more channels, higher bit rates, faster file transfers
- Super slow-motion support in DVCPRO HD and AVC-Intra formats
- Full XDCAM HD workflow support including multicam mode
- Simultaneous high-resolution and low-resolution “proxy” encoding for recording or streaming
- Embedded operating system on mSATA solid state drive (SSD)
- Automatic upconversion and downconversion, user-definable aspect ratio conversion, and closed caption preservation
- Configurable as SAN or standalone solution
- ANC data preserved and full AFD processing
- Scales from two to four channels to more than 100 channels
- Full multi-channel audio support – 16 SDI audio tracks per video channel (32 audio tracks per clip on disk)

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.

ChannelFlex

ChannelFlex doubles the K2 Summit 3G’s capability from supporting four video streams to eight video streams in application-specific configurations:

- Record up to eight camera feeds in DV, XDCAM HD, or AVC-Intra formats
- Record up to two 2X/3X super slo-mo cameras in DVCPRO HD or AVC-Intra formats
- Record up to four 3D cameras or video+key pairs: HD in AVC-Intra/SD in IMX30
- Play up to four 3D files or video+key pairs: HD in AVC-Intra/SD in IMX30

Proxy Encoding

Low-resolution proxy versions of media can be encoded and either streamed over IP networks or stored for use in distributed workflows. This enables extending access to more users to produce content and to remotely monitor playback channels while conserving system resources.

Flexible Monitoring Options

With the built-in VGA multiviewer, all four channels can be monitored in normal mode or up to eight streams when ChannelFlex* is in operation. An SDI monitor output is available with timecode burn-in for each channel.

A user-definable text overlay option** is available for both monitor displays, enabling various information such as channel/clip name, transport controls, play speed, audio meters, and more to be displayed in any location with various text sizes and colors.

A truly unique feature allows a streaming proxy of either input or output video and audio to allow monitoring using an IP network and a standard client viewer.

Built-in Mix Effects

For generating quick highlight packages, often all that is required are simple dissolves or fades between two clips. Each channel 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.

Multiple Format Capabilities

The K2 Summit 3G Production Client is the only server that provides agile codecs enabling playback of SD or HD content seamlessly on the same timeline with any supported format (DV/ DVCPRO, MPEG-2, AVC-Intra, or H.264). With seamless and automatic up/down/ crossconversion of clips to your desired output resolution, the K2 Summit 3G Production Client provides full support for all SD and HD formats. The K2 Summit 3G Production Client also supports the industry-wide AFD standard for 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.

The K2 Summit 3G Production Client is capable of simultaneously encoding a low-resolution proxy along with the high-resolution recording to extend workflows to the user’s desktop.

The K2 Summit 3G Production Client features smooth, high-quality, bi-directional, slow-motion playback, and enhanced jog/shuttle control for all formats including MPEG-2 Long GOP. 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.

* Requires AppCenter Pro or Elite.

** Requires AppCenter Elite.

AUDIO AND CLOSED CAPTION/TELETEXT MULTILINGUAL SUPPORT



Rear view K2 Summit 3G Production Client

Each video channel has up to eight AES/EBU or 16 embedded channels of PCM or compressed audio. For easy track management, each audio track can be identified with a language descriptor*. Additional audio features 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.

Additional audio tracks can be imported into a clip* to easily add additional languages. In addition multiple closed captions or teletext files can be imported from third-party captioning editors for additional language support.

SPECIFICATIONS

Description

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

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

Formats

SD:

- DV, DVCAM, DV25, DV50
- MPEG-2@ML 4:2:0, I-Frame & Long GOP 2-15 Mb/s
- MPEG-2 @ML 4:2:2, I-Frame & Long GOP 4-50 Mb/s

HD:

- MPEG-2@HL 4:2:0, I-Frame & Long GOP 12-100 Mb/s
- MPEG-2 @HL 4:2:2, I-Frame & Long GOP 20-100 Mb/s
- XDCAM HD (18, 25, 35 Mb/s)
- XDCAM HD 4:2:2 (50 Mb/s)
- XDCAM EX
- DVCPRO HD
- AVC-Intra 50/100 (optional)
- H.264/AVCHD playback (optional)

Proxy Encoding

- 4 or 8 streams (licensed through AppCenter Pro and AppCenter Elite)
- Each stream includes 1 video and up to 8 audio tracks for recording
- Any audio tracks can be selected when streaming

Compression:

- Video: MPEG-4 part 10
- Audio: AAC

ChannelFlex Modes (optional)

- Multicam (up to 4 channels)
- Super slo-mo (1 or 2 channels)
- 3D (up to 4 channels)
- Video+key (up to 4 channels)

Audio Special Features

- Scrub audio support (±2X)
- Audio click elimination
- Agile playback of clips with different supported audio formats
- Audio tagging and audio mapping (with K2 AppCenter Pro)
- Audio mix effects (PCM only)
- Cross fade between tracks
- Fade up/down

Power Requirements

- Dual redundant 600W maximum, 400W typical
- Auto-sensing, hot-swap
- 100-240 VAC, 50-60 Hz

Monitor Modes

- SDI monitor out w/timecode burn-in
- VGA multiviewer – w/definable text overlay for above displays including channel name, clip name, transport status, play speed, audio meters, and other status

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 (optional)

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

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)

GPI

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

Dimensions

Height: 9 cm (3.5 in.) – 2 RU

Width: 44.5 cm (17.5 in.)

Depth: 61.6 cm (24.5 in.)

Weight: 24 kg (53 lbs.) maximum

Redundancy

- Redundant power supplies (hot-swappable)
- Redundant cooling

Up/Down/Cross Conversion and Aspect Ratio

- 525↔1080i, 525↔720p, 625↔1080i, 625↔720p
- 720p↔1080i cross conversion
- AFD support for 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

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

16 tracks embedded, per video channel

Reference Genlock

- NTSC/PAL black composite analog
- Two BNC, 75Ω passive loop through
- Burst frequency lock: PAL, +10 Hz at subcarrier NTSC, +20 Hz at subcarrier
- Tri-Level sync conforms to SMPTE 296M-2001 for 1280x720P systems and SMPTE 274M-2008 for 1920x1080

Timecode

- LTC SMPTE 12M, one per channel
- One mini-XLR per input and one mini-XLR with input and output
- 1 kΩ input, 50Ω output impedance
- One VITC reader/writer per video:
 - 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)
- VDCP (RS-422)
- AMP (RS-422 and Ethernet)
- K2.net native API

Media Exchange

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

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 pin out (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

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)
- Quick Start guide
- USB stick with documentation and recovery image

PRODUCT DATA SHEET

K2 Summit 3G Production Clients with Internal Storage (in hours*)

Format Data Drives	DVCPRO 25	DVCPRO 50 AVC-INTRA 50	DVCPRO HD AVC-INTRA 100	IMX 30	XDCAM HD 35	XDCAM HD 50
600 GB RAID-1 (6/6)	240	120	60	207	183	132
600 GB RAID-0 (12/0)	480	240	120	414	366	264

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%.

ORDERING INFORMATION

K2-XDP2-02

K2 Summit 3G Production Client – 2 RU platform with 2 bi-directional HD/SD channels. Supports DV, DVCPRO, DVCPRO 50, DVCPRO HD, and HD/SD MPEG-2 record and agile playback of DV, DVCPRO, DVCPRO 50, DVCPRO HD, and HD/SD MPEG-2 playback. Connects to shared storage via iSCSI over Ethernet or using optional 8 Gb/s Fibre Channel or can be configured with internal SAS storage. Includes dual hot-swappable power supplies, hot-swappable fans, and AppCenter control and configuration application.

K2-XDP2-04

K2 Summit 3G Production Client – 2 RU platform with 4 bi-directional HD/SD channels. Supports DV, DVCPRO, DVCPRO 50, DVCPRO HD, and HD/SD MPEG-2 record and agile playback of DV, DVCPRO, DVCPRO 50, DVCPRO HD, and HD/SD MPEG-2 playback. Connects to shared storage via iSCSI over Ethernet or using optional 8 Gb/s Fibre Channel or can be configured with internal SAS storage. Includes dual hot-swappable power supplies, hot-swappable fans, and K2 AppCenter control and configuration application.

Options

K2-ISCSI

K2 Summit iSCSI connection to the K2 SAN through Gigabit Ethernet.

K2-XDP-FC8GD

K2 Summit client Fibre Channel connection to K2 direct attached storage. Includes dual-port 8 Gb/s Fibre Channel host bus adapter.

K2-XDP-FC8GS

K2 Summit single client Fibre Channel connection to K2 SAN storage. Includes dual-port 8 Gb/s Fibre Channel host bus adapter.

K2-XDP2-12-600R0

K2 Summit 3G internal media storage, includes 12 x 600 GB SAS media drives and RAID controller. Configured as RAID-0 (12 data/no parity). Select one internal media storage option only.

K2-XDP2-12-600R1

K2 Summit 3G internal media storage, includes 12 x 600 GB SAS media drives and RAID controller. Configured as RAID-1 (6 data/6 parity). Select one internal media storage option only.

K2-XDP2-AVC-2CH

K2 Summit 3G 2-channel AVC-Intra codec and H.264 playback license. Includes AVC-Intra level 50 and 100 and encoding and decoding and H.264 L4.2 AVCHD playback. Two required for 4-channel model (K2-XDP2-04) Factory installed.

K2-XDP2-MPG2-MC

K2 Summit 3G MPEG-2 multicam encoding factory option. Adds the ability to record up to 4 video streams per codec module using MPEG-2 compression when used in ChannelFlex mode. Includes hardware and additional MPEG encoding license. Two K2-XDP2-MPG2 options are required for the K2-XDP2-04 and enables up to 8 video streams to be recorded. Also requires factory installed AppCenter Elite license (see K2-APPCTNR-ELTE-F0 below).

K2-TIMEDELAY

K2 software application to control one or two record channels and up to three play channels on a K2 Summit Production Client.

K2-INSYNC-STA

K2 software application synchronizes two K2 standalone file systems.

K2-APPCNTR-PRO-F0

K2 AppCenter Pro for the K2 Summit Platform extends the feature set of standard AppCenter and includes such features as audio track tagging, super out, and proxy encoding licenses for 4 channels of low-resolution proxy generation. Factory installed.

K2-APPCTNR-ELTE-F0

K2 AppCenter Elite for the K2 Summit Platform extends the feature set of standard AppCenter and includes all AppCenter Pro features plus ChannelFlex and proxy encoding licenses for 8 channels of low-resolution proxy generation. ChannelFlex includes 2X and 3X super slo-mo record, key plus fill record and play, and multicam recording. Factory installed.

Spare & Accessories

K2-XDP2-PS-SP

K2 Summit 3G client, spare power supply.

K2-XDP2-IOM-SP

K2 Summit 3G client, spare codec module.

K2-XDP2-CM-SP

K2 Summit 3G client, spare controller module.

K2-XDP-AES-CABLES

K2 Summit AES DB25 to XLR break-out cable set, 2 cables per set. Provides 4 each AES XLR connectors for 8 discrete inputs and 4 each XLR AES connectors for 8 discrete outputs.

Field Kits

K2-APPCNTR-PRO-FK

K2 AppCenter Pro for the K2 Summit Platform extends the feature set of standard AppCenter and includes such features as audio track tagging and proxy encoding licenses for 4 channels of low-resolution proxy generation. Field kit.

K2-APPCTNR-ELTE-FK

K2 AppCenter Elite for the K2 Summit Platform extends the feature set of standard AppCenter and includes all AppCenter Pro features plus ChannelFlex and Proxy encoding licenses for 8 channels of low-resolution proxy generation. ChannelFlex includes 2X and 3X super slo-mo record, key plus fill record and play, and multicam recording. Field Kit.

K2-XDP2-AVC-2CH-FK

K2 Summit 3G 2-channel AVC-Intra codec and H.264 playback license. Includes AVC-Intra level 50 and 100 and encoding and decoding and H.264 L4.2 playback. Two required for 4-channel model (K2-XDP2-04). Field Kit.

K2-XDP2-MPG2-MC-FK

K2 Summit 3G MPEG-2 multicam encoding field kit. Adds the ability to record up to 4 video streams per codec module using MPEG-2 compression when used in ChannelFlex mode. Includes hardware and additional MPEG encoding license. Two K2-XDP2-MPG2-FK kits are required for the K2-XDP2-04 and enables up to 8 video streams to be recorded. Also requires AppCenter Elite license (see K2-APPCTNR-ELTE-FK above).

GLOBAL SERVICES



Grass Valley Global Services specializes in the defining of, deployment of, and support of today's dynamic file-based workflows, based on Grass Valley and third-party solutions. With Grass Valley Global Services, you can achieve your operational goals in the most efficient and cost-effective way possible with a partner you can trust.

www.grassvalley.com/support

Define: We help you to define your business and technology requirements and then design solutions to meet them.

Deploy: Our professional service organization, backed up with proven project management methodologies, can take you from design through deployment, commissioning, and training.

Support: We offer a complete Support Agreement portfolio to keep your systems running and help plan for your long-term maintenance needs.

Join the Conversation at **GrassValleyLive** on Facebook, Twitter, and YouTube.

