

# GV K-Frame XP

## Compact Video Production Center



All new, no-compromise 4K UHD/HD IP and SDI switcher.

### Introduction

Today, producing premium 4K content frequently requires bandwidth and processing capacity that can only be achieved by combining traditional resources. This complexity makes production difficult and at times limits the creative effects that are available in HD productions. The new GV K-Frame XP from Grass Valley is a no-compromise 4K UHD/HD, IP and SDI video processing engine that alleviates these limitations.

The GV K-Frame XP – Compact video production center is the next entry to Grass Valley's K-Frame X line of production switchers. The XP introduces a new generation of single-raster 4K UHD products for live production. Paired with any of Grass Valley's Kayenne, Karrera, Korona or KSP panels, GV K-Frame XP provides unsurpassed 4K UHD connectivity with every input and output supporting 4K UHD 2160p signals.

### Switching in 4K Feels the Same as Switching in HD

Unlike competitive switchers claiming to support 4K UHD, Grass Valley's new GV K-Frame XP production switcher does not internally break down a 12G input into smaller streams or only allow connection to a subset of available I/O connectors. Whether you are producing content in HD, 3G or 4K UHD, there is no reduction in physical I/O count or processing capability resulting in maximum signal density and complete utilization of all available resources.

When you walk into a control room on a mobile truck or studio outfitted with GV K-Frame XP, switching a show in 4K UHD feels the same as switching in HD. It's the same workflow for the operator. Creative limitations vanish with smooth "full-raster" effects available on every keyer.

Multiformat production in a hybrid environment has never been easier. No re-cabling or external equipment is required to alternate between HD and 4K UHD. Internal conversion provides simple utilization of existing HD, SDQS or 2SI resources, while new 12G sources can be used directly in either IP with single-stream 4K UHD on 25 GbE SFPs or SDI.

### Expanded Production Capability

This next-generation production switcher is built on an all-new hardware platform that is not only ready for future production requests, it provides expanded capability for today's productions as well. GV K-Frame XP – Compact supports up to 6 M/Es, every M/E has six keyers with all keyers supported by a full raster 2D DPM with perspective and optional chromakey capability. An additional option is Grass Valley's unique floating pool of up to 16 iDPMs usable in either HD or 4K UHD without losing resources by coupling or pairing. With an eight-channel built-in ImageStore for stills and movies with audio — including HDR support — the replay storage capacity of 128 GB (over 1 minute of 4K UHD) assures your confidence that you are prepared for any event.

### Undiminished I/O Count in Any Format

The GV K-Frame XP – Compact provides more 4K UHD processing per RU than any other competitor, while providing all the features and functions you've come to expect in a Grass Valley switcher. A maximum I/O footprint of 80x40 connections remains the same in HD and 4K UHD 2160p. The undiminished I/O count is the same regardless of whether you are producing in all IP, all SDI, or any combination of I/O boards. And to keep it simple, the I/O boards for the GV K-Frame XP are the same as the current GV K-Frame X.

## KEY FEATURES

- GV K-Frame XP – Compact video production center: 8 RU frame (with internal power supplies)
- 80x40 I/O footprint supports both IP and SDI offerings:
  - IP I/O boards come in two bi-directional configurations:
    - 16x8 and 8x4 IP boards, both accept either 10 GbE or 25 GbE SFPs
    - IP boards accept standard SMPTE ST 2110-20/30/40, TICO for SMPTE ST 2022-6, and SMPTE ST 2022-7 for redundancy
  - SDI I/O boards come in two offerings: 16x8 with “gearbox” functionality, and 8x4 with conversion
    - 8x4 conversion board for frame sync and format conversion, up/down/cross converts with direct connection (HD→4K and 4K→HD)
    - MatchSync functionality is found on both the 16x8 with “gearbox” and the 8x4 with conversion
- 4K UHD 2160p sources can be handled in a variety of ways: Two (2) single streams on a 25 GbE SFP, one on (1) 12G-SDI link, one (1) on a 10 GbE SFP with TICO compression, 2SI or SDQS quad link on four (4) 3G-SDI or IP
- Conversion modules enable conversion to/from HD and 4K UHD 2160p (2SI or SDQS) on inputs and outputs and between 2SI and SDQS. Both SDI “gearbox” and conversion boards support 12G-SDI single link sources as well as quad link 4K UHD
- Maintain the same functionality and feature DNA as the current K-Frame X: Up to 6 M/Es, spread over two new VPE (Video Processing Engine) boards
- Six (6) full function keyers per M/E with 2D DPMs with perspective per keyer
- Up to 16 optional 3D iDPMs, spread over two new DPM (Digital Picture Manipulation) boards
- Supports HD, 1080p 3G, 12G, 4K UHD and HDR (HLG and PQ) with ability to set HDR (HLG and PQ) payload ID on each output
- Internal 8-channel ImageStore for stills and movies with video, key and audio (up to 128 GB of storage)
- E-MEMs, Macros and show files are fully compatible with K-Frame and K-Frame X
- Multiviewers (up to 4, licensable)
- Compatible with all Kayenne, Karrera, Korona and KSP panels
- Rugged modular design on both control surface and chassis for field reconfiguration and serviceability
- Four (4) independent suites capability in both HD or 4K UHD
- MatchSync aligns incoming SDI signals with IP inputs in a mixed format environment
- Automation application control under GV Ignite and GV Pace, or other third-party applications
- On-panel triggered integration with graphics devices: ChyronHego LyricX or PRIME, and Ross Video XPression (via Ross Talk)

Feature/Function	GV K-Frame XP – Compact
<b>Frame Processing</b>	4K UHD 2160p (full-raster), 1080p, 1080i, 720p
<b>Video frame</b>	8 RU frame (with internal power supplies)
<b>1080p 3G I/O (IP, SDI)</b>	HD and 4K-2SI or SDQS are supported
<b>12G SDI I/O (4K 2160p)</b>	4K UHD 2160p – SMPTE ST 2082-10
<b>4K UHD 2160p IP I/O</b>	4K UHD 2160p single-stream IP
<b>HDR capability</b>	10-bit, HLG or PQ
<b>I/O type</b>	SDI, IP or mixed
<b>I/O footprint</b>	Up to 80x40 I/O in either full SDI, full IP or mixed
<b>IP connector type</b>	SFPs: 10 GbE or 25 GbE
<b>Other connectors</b>	2 MediaPort Inputs
<b>Mix/effects</b>	Up to 6 M/Es each with six (6) full keyers with 2D DPMs
<b>Internal ImageStore</b>	8-channel (video+key) — stills or movies with audio, maximum storage up to 128 GB (Licensable as 32 GB, 64 GB, or 128 GB)
<b>Conversion</b>	Optional inputs: up to 16 SDI with frame syncs and format converters / Outputs: up to 8 SDI format converters
<b>2D DPMs</b>	2D DPM with perspective associated with every keyer
<b>3D DPMs</b>	Up to 16 floating 3D iDPMs with effects
<b>Control surface</b>	Any Kayenne, Karrera, KSP, and Korona control surface runs on any K-Frame video processing engine. (Available in multiple configurations)
<b>Software panel option</b>	KSP touchscreen GUI software available with optional tactile custom keyboard

## SPECIFICATIONS

## The initial release will support 12 Frame Operating Modes (FOMs):

2160p 59.94 Hz  
 2160p 50 Hz  
 2160p 29.97 Hz  
 2160p 23.98 Hz  
 1080p 59.94 Hz – Level A  
 1080p 50 Hz – Level A  
 1080p 29.97 Hz  
 1080p 23.98 Hz  
 1080i 59.94 Hz  
 1080i 50 Hz  
 720p 59.94 Hz  
 720p 50 Hz

## Mechanical Specification

**Frame:** Compact frame  
**Depth:** 63.2 cm (24.90 in.)  
**Width:** 44.7 cm (17.60 in.)  
**Height:** 34.5 cm (13.97 in.)  
**Weight:** 59.7 kg (125 lbs.)\*  
**RU:** 8 RU

## Inputs

80 inputs with the optional capability of converting 4K 2SI inputs into a single internal 12G input

## Outputs

40 outputs with the optional capability of converting a single internal 12G output into a 4K 2SI or SDQS quad link output

## GPI+Tally I/O

16x GPI + 16x GPO + 64x Tally

## Audio Standards

## Audio will be passed as:

SDI: Embedded  
 SMPTE ST 2022-6  
 Embedded (Transport SMPTE ST 2110-30 AES67 at 48 kHz, Level A and B)

\* Frame weight is with three power supplies. A single supply weighs 2.5 kg (5.4 lbs.).

## Video Standards

## IP Video Standards:

SMPTE ST 2110-20/30/40  
 SMPTE ST 2022-6 with TICO

## 4K UHD Mode:

SMPTE ST 2082-10 (12G SDI)  
 SMPTE ST 425-5:2014 Quad Link 2-Sample-Interleave (2SI)  
 SMPTE ST 425-5:2014 Quad Link Square Division Quad Split (SDQS)  
 SMPTE ST 2110-20/30/40  
 SMPTE ST 2022-6 with TICO

## 3G Mode:

SMPTE ST 424 section 4 – Level A – 1080p 50/59.94/60 Hz

## HD Mode:

SMPTE ST 292-1 1080i25/29.97/30/50/60 Hz  $\pm 5\%$   
 SMPTE ST 292-1 720p50/59.94/60

## Serial Digital Video Inputs

## Interface:

4K 12G video format SMPTE ST 2082  
 3G video formats SMPTE ST 424-2006  
 HD video formats SMPTE ST 292-1998  
 SD video formats SMPTE ST 259-1997 ITU-R BT.656 (requires K-FRM-IO-CONV-X module)

## Return loss:

$\geq 4$  dB, 6.0 GHz to 12 GHz  
 $\geq 15$  dB, 5 MHz to 1.5 GHz  
 $\geq 10$  dB, 1.5 GHz to 3.0 GHz

**Type of connector:** 75 $\Omega$  BNC (SMPTE ST 259)

**Nominal amplitude:** 800 mVp-p terminated

**Input impedance:** 75 $\Omega$

**Max. cable length: using Belden 1694A type cable**

4K 12G video 60m (197 ft.) typical  
 3G video 140m (459 ft.) typical  
 HD video 200m (656 ft.) typical  
 SD video 350m (1,148 ft.) typical

## Serial Digital Video Outputs

## Interface:

4K 12G video format SMPTE ST 2082  
 3G video formats SMPTE ST 424-2006  
 HD video formats SMPTE ST 292-1998  
 SD video formats SMPTE ST 259-1997 ITU-R BT.6560 (requires K-FRM-IO-CONV-X module)

## Return loss:

$\geq 4$  dB, 6.0 GHz to 12 GHz  
 $\geq 15$  dB, 5 MHz to 1.5 GHz  
 $\geq 10$  dB, 1.5 GHz to 3.0 GHz

**Type of connector:** 75 $\Omega$  BNC (SMPTE ST 259)

**Nominal amplitude:** 800 mVp-p across 75 $\Omega$

## Rise and fall times:

4K 12G:  $\leq 45$  ps between 20% and 80% amplitude  
 3G & HD video formats  $\leq 135$  ps between 20% and 80% amplitude  
 SD video formats, 400 to 1400 ps between 20% and 80% amplitude

## Timing jitter:

4K 12G video format  $\leq 2.0$  UI  
 3G video formats  $\leq 2.0$  UI  
 HD video formats  $\leq 1.0$  UI  
 SD video formats  $\leq 0.2$  UI

## Alignment jitter:

4K 12G video format  $\leq 0.3$  UI  
 3G video formats  $\leq 0.3$  UI  
 HD video formats  $\leq 0.2$  UI  
 SD video formats  $\leq 0.2$  UI

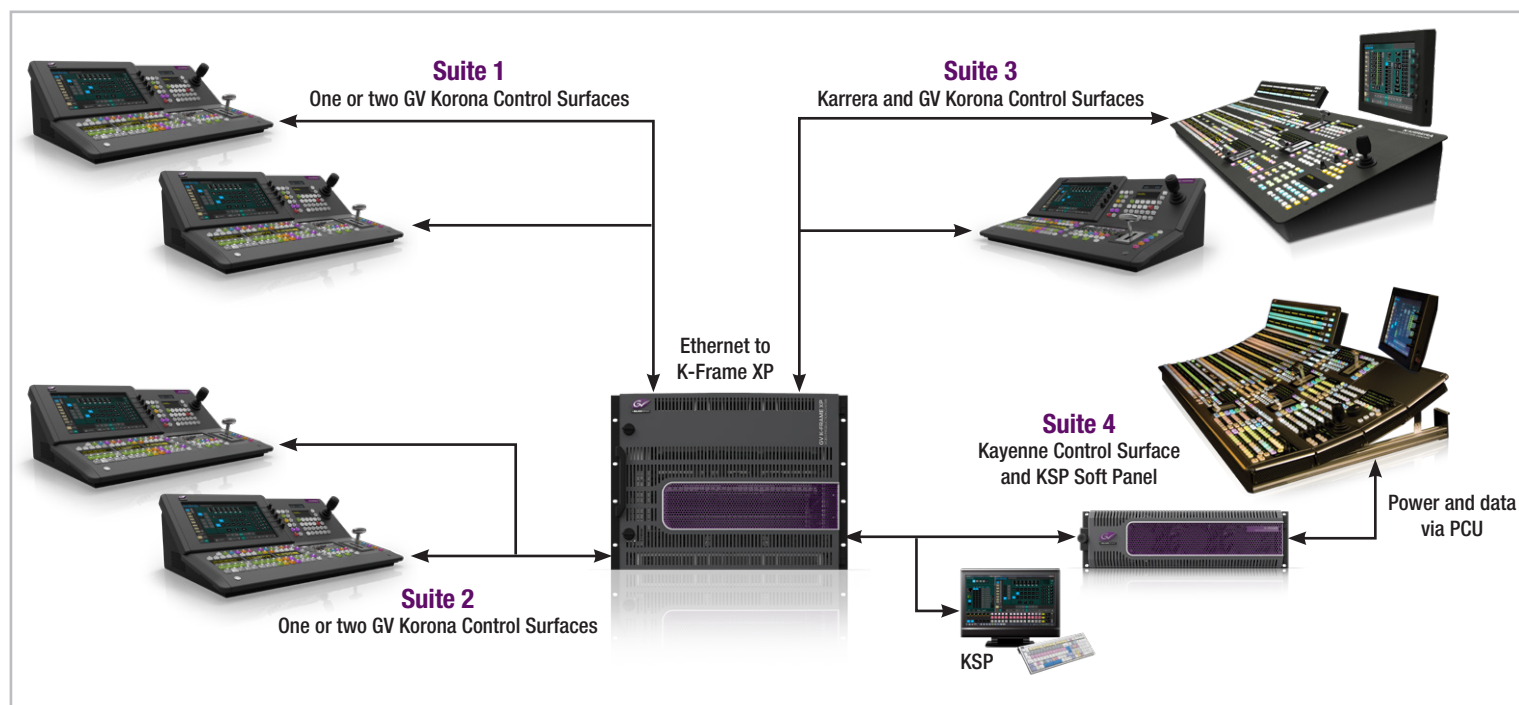
**Output impedance:** 75 $\Omega$

**DC offset:**  $<500$  mV with 75 $\Omega$  termination

**Ancillary and embedded data:** Blanked or passed (user selectable)

**EDH:** Blanked

## Four Suites with K-Frame XP – Compact



**SPECIFICATIONS (CONT.)****Reference Input****Analog:** Black or Tri-level sync**Digital:** SDI – SMPTE ST 425-1**PTP:** IEEE 1588-2008 Precision Time Protocol with SMPTE ST 2059-2 PTP Profile, out of band**Analog Reference Input****Video standard:** Analog black or Tri-level sync**Return loss:** >40 dB, up to 5 MHz**Connectors:** 2 BNC loop-through**Impedance:** 75Ω external termination**Communications****Connections:**

PCU to video frame: LAN cable 100m (328 ft.) max. length

Control panel to PCU: dedicated cables, choice of 7.5m or 15m

Menu panel to PCU: dedicated cables, choice of 7.5m or 15m

Audio AES67: 2x SFP for AES67 (SFP may be Fiber or RJ-45)

Machine control: 8x RS-422

PTP: 2x SFP

**Interoperability:**

The Video Production Centers are interoperable with the GV Orbit, GV Convergent, Sirius, IQ Edge, Encore, Jupiter, SMS-7000 and NV9000 routing control systems; LDK Series and LDX Series cameras using Connect Gateway, VISCA controlled PTZ systems; and with the K2 Summit, sQ servers, legacy Profile servers, and T2 iDDRs

**Supported Control Protocols**

The Video Production Centers support Ethernet and serial AMP protocol (standard in all systems), serial BVW and Odetics protocols, as well as controlling devices using PBus II and GPIs

Serial BVW-75 for VTR control

AMP (advanced media protocol) for Profile PVS, Profile XP Media Platform, K2, M-Series, Turbo iDDR and T2 iDDR systems over Ethernet and serial

Grass Valley native protocol for routers/routing control systems (Trinix/Trinix NXT, Venus, Triton, NVISION and third-party routers; Jupiter, Encore and NV9000 router control systems)

Grass Valley Sirius

NVISION Native Router Control Protocol NP0017

Ethernet tally

Grass Valley remote Aux Panels via Ethernet

Grass Valley editor protocol for edit controllers and external control

VDCP Serial and Ethernet

RossTalk protocol support for direct control of XPression graphics engine

Single-point-of-control integration for graphics with ChyronHego Click Effects PRIME

iControl

NMOS IS-04 and IS-05

**Power****Video Processing Frame 8 RU:**Line voltage: 100V-240 VAC  $\pm 10\%$  power factor corrected

Automatic line-voltage sensing for 120V and 240V sources

Line frequency: 50/60 Hz  $\pm 5\%$ 

Power consumption: max. 1800W

**Kayenne Control Panel:**Line voltage: 100V-240 VAC  $\pm 10\%$  power factor corrected

Automatic line-voltage sensing for 120V and 240V sources

Line frequency: 50/60 Hz  $\pm 5\%$ 

Power consumption: max. panel configuration 600W

Leakage current: &lt;2.5 mA

**Karrera Control Panel:**Line voltage: 100V-240 VAC  $\pm 10\%$  power factor corrected

Automatic line-voltage sensing for 120V and 240V sources

Line frequency: 50/60 Hz  $\pm 5\%$ 

Power consumption: max. 200W

Leakage current: &lt;2.5 mA

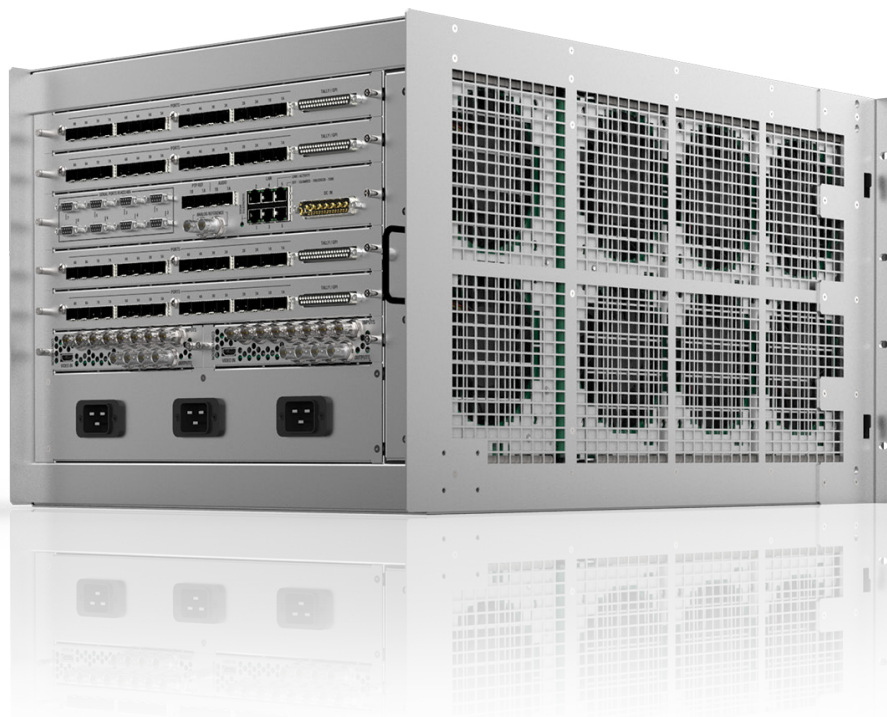
**GV Korona Control Panel:**

Line voltage: 100-240 VAC  $\pm 10\%$  power factor corrected with automatic line-voltage sensing for 120V and 240V sources

Line frequency: 50/60 Hz  $\pm 5\%$ 

Power consumption: max. 60W

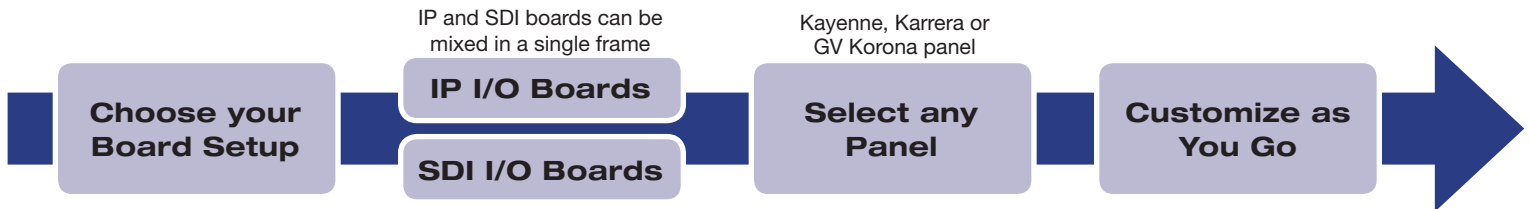
Leakage current: &lt;2.5 mA

**Environmental Conditions****Storage temperature:** -20 to 70°C (-4 to 158°F)**Operating temperature:** 0 to 40°C (32 to 104°F)**Relative humidity:** 0-95% (non-condensing)**Electromagnetic environment:** E2 (according to EN55103-1, -2)



## ORDERING

Look for the system nomenclature that includes panel type/size and video processing frame size, then add your options; or build your system à la carte.



- SDI I/O boards come in two types: 16x8 with “gearbox” functionality, and 8x4 conversion
- IP I/O boards come in two configurations: 16x8 and 8x4
- 8x4 conversion board for frame sync and format conversion, up/down/cross converts with direct connection

## Kayenne Panel Systems

### KAYN-3-35-3M-CXP

#### Kayenne K-Frame CXP SDI 3 M/E System

Includes control panel, video frame, and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license.

3-stripe (3 M/E) Kayenne modular panel (KAYN-PNL-300-35), Panel Control Unit with redundant power, supply, touchscreen menu panel, manual and set of cables (choose 7.5 or 15 meter).

GV K-Frame XP — Compact 8 RU (K-FRM-100CXP) which includes:

One (1) XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license

One (1) Video Processing Engine module (K-FRM-VPE-XP) with one (1) M/E license (K-FRM-LIC-ME)

32x16 I/O SDI footprint comprised of two K-FRM-IO-FULL-X-GB modules

Two power supplies (K-FRM-PSU-XP)

PLUS, two M/E licenses (K-FRM-LIC-ME)

PLUS, 18 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

### KAYN-3-35-3M-CXP-I

#### Kayenne K-Frame CXP IP 3 M/E System

Includes control panel, video frame, and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license. Fiber SFPs are purchased separately.

3-stripe (3 M/E) Kayenne modular panel (KAYN-PNL-300-35), Panel Control Unit with redundant power supply, touchscreen menu panel, manual and set of cables (choose 7.5 or 15 meter).

GV Frame XP — Compact 8 RU (K-FRM-100CXP-I) which includes:

One (1) XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license

One (1) Video Processing Engine module (K-FRM-VPE-XP) with one (1) M/E license (K-FRM-LIC-ME)

32x16 I/O IP footprint comprised of two K-FRM-IO-FULL-X-I module

Two power supplies (K-FRM-PSU-XP)

PLUS, two M/E licenses (K-FRM-LIC-ME)

PLUS, 18 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

### KAYN-3-35-4M-CXP

#### Kayenne K-Frame CXP SDI 4 M/E System

Includes control panel, video frame, and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license.

3-stripe (3 M/E) Kayenne modular panel (KAYN-PNL-300-35), Panel Control Unit with redundant power supply, touchscreen menu panel, manual and set of cables (choose 7.5 or 15 meter).

GV K-Frame XP — Compact 8 RU (K-FRM-100CXP) which includes:

One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license

One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)

32x16 I/O SDI footprint comprised of two K-FRM-IO-FULL-X-GB modules

Two power supplies (K-FRM-PSU-XP)

PLUS, one Video Processing Engine module (K-FRM-VPE-XP)

PLUS, three M/E licenses (K-FRM-LIC-ME)

PLUS, 24 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

### KAYN-3-35-4M-CXP-I

#### Kayenne K-Frame CXP IP 4 M/E System

Includes control panel, video frame, and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license. Fiber SFPs are purchased separately.

3-stripe (3 M/E) Kayenne modular panel (KAYN-PNL-300-35), Panel Control Unit with redundant power supply, touchscreen menu panel, manual and set of cables (choose 7.5 or 15 meter).

GV K-Frame XP — Compact 8 RU (K-FRM-100CXP-I) which includes:

One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license

One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)

32x16 I/O SDI footprint comprised of two K-FRM-IO-FULL-X-I modules

Two Power supplies (K-FRM-PSU-XP)

PLUS, one Video Processing Engine module (K-FRM-VPE-XP)

PLUS, three M/E licenses (K-FRM-LIC-ME)

PLUS, 24 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

### KAYN-4-35-4M-CXP

#### Kayenne K-Frame CXP SDI 4 M/E System

Includes control panel, video frame, and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license.

4-stripe (4 M/E) Kayenne modular panel (KAYN-PNL-400-35), Panel Control Unit with redundant power supply, touchscreen menu panel, manual and set of cables (choose 7.5 or 15 meter).

GV K-Frame XP — Compact 8 RU (K-FRM-100CXP) which includes:

One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license

One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)

32x16 I/O SDI footprint comprised of two K-FRM-IO-FULL-X-GB modules

Two power supplies (K-FRM-PSU-XP)

PLUS, one Video Processing Engine module (K-FRM-VPE-XP)

PLUS, three M/E licenses (K-FRM-LIC-ME)

PLUS, 24 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

### KAYN-4-35-4M-CXP-I

#### Kayenne K-Frame CXP IP 4 M/E System

Includes control panel, video frame, and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license. Fiber SFPs are purchased separately.

4-stripe (4 M/E) Kayenne modular panel (KAYN-PNL-400-35), Panel Control Unit with redundant power supply, touchscreen menu panel, manual, and set of cables (choose 7.5 or 15 meter).

GV K-Frame XP — Compact 8 RU (K-FRM-100CXP-I) which includes:

One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license

One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)

32x16 I/O SDI footprint comprised of two K-FRM-IO-FULL-X-I modules

Two power supplies (K-FRM-PSU-XP)

PLUS, one Video Processing Engine module (K-FRM-VPE-XP)

PLUS, three M/E licenses (K-FRM-LIC-ME)

PLUS, 24 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**ORDERING (CONT.)****Karrera Panel Systems****KRR-2-25-2M-CXP****Karrera K-Frame CXP SDI 2 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license.

2-stripe (2 M/E) Karrera panel (KRR-PNL-200-25) with touchscreen menu panel set (KRR-PNL-MENU-SET).

GV K-Frame XP — Compact 8 RU (K-FRM-100CXP) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O SDI footprint comprised of two K-FRM-IO-FULL-X-GB modules
- Two Power supplies (K-FRM-PSU-XP)

PLUS, one M/E licenses (K-FRM-LIC-ME)

PLUS, 12 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**KRR-2-25-2M-CXP-I****Karrera K-Frame CXP IP 2 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license. Fiber SFPs are purchased separately.

2-stripe (2 M/E) Karrera panel (KRR-PNL-200-25) with touchscreen menu panel set (KRR-PNL-MENU-SET).

GV Frame XP — Compact 8 RU (K-FRM-100CXP-I) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O IP footprint comprised of two K-FRM-IO-FULL-X-I modules
- Two power supplies (K-FRM-PSU-XP)

PLUS, one M/E license (K-FRM-LIC-ME)

PLUS, 12 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**KRR-2-25-C-2M-CXP****Karrera K-Frame CXP SDI 2 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license.

2-stripe (2 M/E) Karrera compact panel (KRR-PNL-200-25-C) with touchscreen menu panel set (KRR-PNL-MENU-SET)

GV K-Frame XP — Compact 8 RU (K-FRM-100CXP) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O SDI footprint comprised of two K-FRM-IO-FULL-X-GB modules
- Two Power supplies (K-FRM-PSU-XP)

PLUS, one M/E licenses (K-FRM-LIC-ME)

PLUS, 12 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**KRR-2-25-C-2M-CXP-I****Karrera K-Frame CXP IP 2 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license. Fiber SFPs are purchased separately.

2-stripe (2 M/E) Karrera compact panel (KRR-PNL-200-25-C) with touchscreen menu panel set (KRR-PNL-MENU-SET).

GV Frame XP — Compact 8 RU (K-FRM-100CXP-I) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O IP footprint comprised of two K-FRM-IO-FULL-X-I modules
- Two power supplies (K-FRM-PSU-XP)

PLUS, one M/E licenses (K-FRM-LIC-ME)

PLUS, 12 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**KRR-3-35-3M-CXP****Karrera K-Frame CXP SDI 3 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license.

3-stripe (3 M/E) Karrera panel (KRR-PNL-300-35) with touchscreen menu panel set (KRR-PNL-MENU-SET).

GV K-Frame XP — Compact 8 RU (K-FRM-100CXP) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O SDI footprint comprised of two K-FRM-IO-FULL-X-GB modules
- Two power supplies (K-FRM-PSU-XP)

PLUS, two M/E licenses (K-FRM-LIC-ME)

PLUS, 18 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**KRR-3-35-3M-CXP-I****Karrera K-Frame CXP IP 3 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license. Fiber SFPs are purchased separately.

3-stripe (3 M/E) Karrera panel (KRR-PNL-300-35) with touchscreen menu panel set (KRR-PNL-MENU-SET).

GV Frame XP — Compact 8 RU (K-FRM-100CXP-I) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O IP footprint comprised of two K-FRM-IO-FULL-X-I modules
- Two power supplies (K-FRM-PSU-XP)

PLUS, two M/E licenses (K-FRM-LIC-ME)

PLUS, 18 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**KRR-3-35-4M-CXP****GV Karrera K-Frame CXP SDI 4 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license.

3-stripe (3 M/E) Karrera panel (KRR-PNL-300-35) with touchscreen menu panel set (KRR-PNL-MENU-SET).

GV K-Frame XP — Compact 8 RU (K-FRM-100CXP) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O SDI footprint comprised of two K-FRM-IO-FULL-X-GB modules
- Two Power supplies (K-FRM-PSU-XP)

PLUS, one Video Processing Engine module (K-FRM-VPE-XP)

PLUS, three M/E licenses (K-FRM-LIC-ME)

PLUS, 24 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**KRR-3-35-4M-CXP-I****Karrera K-Frame CXP IP 4 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license. Fiber SFPs are purchased separately.

3-stripe (3 M/E) Karrera panel (KRR-PNL-300-35) with touchscreen menu panel set (KRR-PNL-MENU-SET).

GV Frame XP — Compact 8 RU (K-FRM-100CXP-I) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O IP footprint comprised of two K-FRM-IO-FULL-X-I modules
- Two power supplies (K-FRM-PSU-XP)

PLUS, one Video Processing Engine module (K-FRM-VPE-XP)

PLUS, three M/E licenses (K-FRM-LIC-ME)

PLUS, 24 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**ORDERING (CONT.)****GV Korona Panel Systems****KOR-2-20-2M-CXP****GV Korona K-Frame CXP SDI 2 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G, and full-raster 4K UHD 2160p with the appropriate license.

2-stripe (2 M/E) GV Korona panel (KOR-PNL-200-20) with built-in multitouch touchscreen menu

GV K-Frame XP — Compact 8 RU (K-FRM-100CXP) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O SDI footprint comprised of two K-FRM-IO-FULL-X-GB modules
- Two power supplies (K-FRM-PSU-XP)

PLUS, one M/E license (K-FRM-LIC-ME)

PLUS, 12 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**KOR-2-20-2M-CXP-I****GV Korona K-Frame CXP IP 2 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G, and full-raster 4K UHD 2160p with the appropriate license. Fiber SFPs are purchased separately.

2-stripe (2 M/E) GV Korona panel (KOR-PNL-200-20) with built-in multitouch touchscreen menu.

GV Frame XP — Compact 8 RU (K-FRM-100CXP-I) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O IP footprint comprised of two K-FRM-IO-FULL-X-I modules
- Two power supplies (K-FRM-PSU-XP)

PLUS, two M/E licenses (K-FRM-LIC-ME)

PLUS, 12 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**KOR-3-25-3M-CXP****GV Korona K-Frame CXP SDI 3 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license. Fiber SFPs are purchased separately.

3-stripe (3 M/E) GV Korona panel (KOR-PNL-300-25) with built-in multitouch touchscreen menu.

GV Frame XP — Compact 8 RU (K-FRM-100CXP) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O SDI footprint comprised of two K-FRM-IO-FULL-X-GB modules
- Two power supplies (K-FRM-PSU-XP)

PLUS, two M/E licenses (K-FRM-LIC-ME)

PLUS, 18 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**KOR-3-25-3M-CXP-I****GV Korona K-Frame CXP IP 3 M/E System**

Includes control panel, video frame and licenses. XP systems are capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license. Fiber SFPs are purchased separately.

3-stripe (3 M/E) GV Korona panel (KOR-PNL-300-25) with built-in multitouch touchscreen menu.

GV Frame XP — Compact 8 RU (K-FRM-100CXP-I) which includes:

- One XP Controller module (K-FRM-CTRL-CXP) with onboard ImageStore, requires license
- One Video Processing Engine module (K-FRM-VPE-XP) with one M/E license (K-FRM-LIC-ME)
- 32x16 I/O IP footprint comprised of two K-FRM-IO-FULL-X-I modules
- Two power supplies (K-FRM-PSU-XP)

PLUS, two M/E licenses (K-FRM-LIC-ME)

PLUS, 18 2D DPMs with perspective (K-FRM-LIC-2DDPM-XP)

**GV K-Frame Video Production Centers****K-FRM-100CXP****GV K-Frame XP Compact (8 RU) SDI-based Video Production Center**

With internal power supplies, capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license; it includes:

- Two power supplies (K-FRM-PSU-XP)
- One XP Compact Controller Processor module (K-FRM-CTRL-CXP) with on-board ImageStore, requires a license
- 32 SDI inputs/16 SDI dual outputs spanning two K-FRM-IO-FULL-X-GB. I/O capable of 4K UHD 2160p, 3G and/or 12 GB w/ "gearbox" functionality
- One Video Processing Engine module (K-FRM-VPE-XP) capable of licensing three on-board processors as either M/E, eDPM or multiviewer. M/E includes:
  - 18 inputs — A/B/C/D backgrounds, 1/2 utility, six video/key pairs
  - Seven outputs — Program A, B, C, D (Programmable Clean Feed); Preview A, C; optional M/E view
  - Six full-function keyers with two pages of V/K store
  - Licensable 2D DPMs with perspective on each keyer (K-FRM-LIC-2DDPM-XP)
  - Cut, mix and wipe transitions
- One Mix/Effect license (K-FRM-LIC-ME) enables one M/E on the VPE module
- Eight GPI inputs and eight GPI outputs (max. 16 GPI inputs and eight GPI outputs), 32 tally outputs (max. 64 tally outputs)

999 macros, 1,000 E-MEMs, machine control (serial and Ethernet).

The frame has a maximum of six M/Es with maximum 36 full-function keyers.

Maximum I/O footprint 80x40 in HD or 4K UHD 2160p.

**K-FRM-100CXP-I****GV K-Frame XP — Compact (8 RU) IP-based Video Production Center**

With internal power supplies, capable of processing in HD, 1080p 3G and full-raster 4K UHD 2160p with the appropriate license; it includes:

- Two power supplies (K-FRM-PSU-XP)
- One XP Compact Controller Processor module (K-FRM-CTRL-CXP) with on-board ImageStore, requires a license
- 32 IP inputs/16 IP outputs spanning two bidirectional K-FRM-IO-FULL-X-I boards. SFP connector cages can be stuffed for either 10 GbE or 25 GbE, SFPs must be ordered separately (K-FRM-IO-SFP10-25G). Board may also be licensed for SMPTE ST 2022-7 redundancy (K-FRM-LIC-IO-RDN-X)
- One Video Processing Engine module (K-FRM-VPE-XP) capable of licensing three on-board processors as either M/E, eDPM or multiviewer. M/E includes:
  - 18 inputs — A/B/C/D backgrounds, 1/2 utility, six video/key pairs
  - Seven outputs — Program A, B, C, D; Preview A, C; optional M/E view
  - Six full-function keyers with two pages of V/K store
  - Licensable 2D DPMs with perspective on each keyer (K-FRM-LIC-2DDPM-XP)
  - Cut, mix and wipe transitions
- One Mix/Effect license (K-FRM-LIC-ME) enables one M/E on the VPE module
- Eight GPI inputs and eight GPI outputs (max. 16 GPI inputs and eight GPI outputs), 32 tally (max. 64 tally outputs)

999 macros, 1,000 E-MEMs, machine control (serial and Ethernet).

The frame has a maximum of 6 M/Es with maximum 36 full-function keyers.

Maximum I/O footprint 80x40 in HD or 4K UHD 2160p.

**ORDERING (CONT.)****Options****K-FRM-VPE-XP****GV K-Frame XP Video Processing Engine Module**

With three processors that can be licensed as either M/E (K-FRM-LIC-ME), multiviewer (K-FRM-LIC-MLTVWR) or an eDPM (K-FRM-LIC-EDPM). M/E includes:

- 18 inputs — A/B/C/D backgrounds, 1/2 utility, six video/key pairs
- Seven outputs — Program A, B, C, D; Preview A, C; optional M/E view
- Six full-function keyers with two pages of V/K store
- Licensable 2D DPMs with perspective on each keyer (K-FRM-LIC-2DDPM-XP)
- Cut, mix and wipe transitions

**K-FRM-PSU-XP**

GV K-Frame XP power supply for redundancy, replacement or spares on K-FRM-100CXP.

**K-FRM-CXP-KIT**

GV K-Frame XP — Compact (8 RU) Video Production Center Spares Kit includes: Control Processor module (K-FRM-CTRL-CXP) and fan module.

**K-FRM-CTRL-CXP**

GV K-Frame XP — Compact Controller Processor module for K-FRM-100CXP enabling processing in full-raster 4K UHD 2160p, 1080p 3G and HD. The internal ImageStore functionality resides on-board with eight channel pairs of V&K for stills and movies with audio. ImageStore storage capacity up to 128 GB and movies requires licenses.

**K-FRM-LIC-IDPM-8**

K-Frame Software License enabling eight of the available floating iDPM (Internal Digital Manipulator) video and key channels. Includes: Kurl with nonlinear transforms including page-turn, page-roll, spheres, ripple, slits, mirrors, splits, size modulation and position modulation; plus Spektra with Lighting, Wide-range defocus, Glow and Output Recursives. When utilized on GV K-Frame XP, a hardware module option is required (K-FRM-DPM-XP). Order under switcher configuration or under K-FRM-SW-OPT, include frame serial number.

**K-FRM-LIC-12G-CXP**

K-Frame Software License enabling 12G (full-raster 4K UHD 2160p) and 3G 1080p formats in the GV K-Frame XP — Compact (K-FRM-100CXP or K-FRM-100CXP-I). Order under switcher configuration or under K-FRM-SW-OPT, include frame serial number.

**K-FRM-LIC-2DDPM-XP**

K-Frame Software License enabling ALL 2D DPMs with perspective available on licensed M/Es. Can only be licensed on GV K-Frame XP systems. Order under switcher configuration or under K-FRM-SW-OPT.

**K-FRM-LIC-IMG128GB**

K-Frame Software License enabling 128 GB of storage capacity in the internal ImageStore. Can only be licensed on GV K-Frame XP systems. Order under switcher configuration or under K-FRM-SW-OPT.

**K-FRM-PRO-XP-PS**

GV K-Frame XP PRO Performance Suite software includes:

- One K-FRM-LIC-IMG-32GB
- One K-FRM-LIC-IDPM-2, requires purchase of K-FRM-DPM-XP module (Scheduled availability Nov. 2020)
- One K-FRM-LIC-CHRO-2
- One K-FRM-LIC-FLEX

Only available for GV K-Frame XP systems. Order under switcher configuration or under K-FRM-SW-OPT.

**K-FRM-ELITE-XP-PS**

GV K-Frame XP ELITE Performance Suite software includes:

- One K-FRM-LIC-IMG-64GB
- One K-FRM-LIC-IDPM-8, requires purchase of K-FRM-DPM-XP module (Scheduled availability Nov. 2020)
- One K-FRM-LIC-CHRO-ALL
- One K-FRM-LIC-FLEX
- One K-FRM-LIC-DBL

Only available for GV K-Frame XP systems. Order under switcher configuration or under K-FRM-SW-OPT.

**K-FRM-XTREME-XP-PS**

GV K-Frame XP XTREME Performance Suite software includes:

- One K-FRM-LIC-IMG-128GB
- One K-FRM-LIC-IDPM-ALL, requires purchase of K-FRM-DPM-XP module (Scheduled availability Nov. 2020)
- One K-FRM-LIC-CHRO-ALL
- One K-FRM-LIC-FLEX
- One K-FRM-LIC-DBL

Only available for GV K-Frame XP systems. Order under switcher configuration or under K-FRM-SW-OPT.

**K-FRM100C-UPG-CXPI**

K-Frame Compact chassis hardware (K-FRM-100C) upgrade to GV K-Frame XP — Compact chassis hardware (K-FRM-100CXP-I). This upgrade provides the following:

- One K-FRM-100CXP-I
- Matched IP I/O footprint up to 48x24
- Up to two K-FRM-LIC-ME licenses provided

Any additional hardware modules or software licenses shall be purchased options.

**K-FRM100C-UPG-CXP**

K-Frame Compact chassis hardware (K-FRM-100C) upgrade to GV K-Frame XP — Compact chassis hardware (K-FRM-100CXP). This upgrade provides the following:

- One K-FRM-100CXP
- Matched SDI I/O footprint up to 48x24
- Up to two K-FRM-LIC-ME licenses provided

Any additional hardware modules or software licenses shall be purchased options.



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