

# LiveTouch 2000

## Powerful UHD, 3G & HD Server Platform for Instant Replay and Super Slo-mo Applications



LiveTouch 2000 is the next-generation slow-motion and instant replay platform for studio and sports applications. LiveTouch 2000 includes a ultra high-density video server that offers up to 12 UHD/24 3G/HD channels in 3 RU, as well as the world-acclaimed, intuitive LiveTouch interface, which boasts the latest innovation to make your instant replay workflows quick and easy, in UHD, 3G or HD.

### System overview

LiveTouch from Grass Valley is a scalable live action highlights system that makes slow-motion and instant replay workflows fast and effortless. The intuitive touchscreen panel is quick to learn and easy to use, making highlights selection sure, simple and robust. LiveTouch can scale to meet 4K UHD, 3G and HD productions of any size. It is easily configurable to support large sports events and multiple studio productions. Uniquely, LiveTouch supports integrated editing with no delays due to media movement and without the cost of duplicating assets or storage. Highlights packages and instant replays get to air faster, and system design is dramatically simplified.

### Built without compromise — the most powerful replay server on the market

LiveTouch 2000 provides an unrivaled channel count in a compact chassis. It provides 12 channels of UHD or 24 channels of 3G/HD in a single 3 RU mainframe. This high density, combined with LiveTouch's ability to handle any format without any external conversion results in significant cost, space and power savings. This also means you don't have to make compromises to your UHD workflows: no more channel count or processing limitations in UHD!

Each LiveTouch 2000 I/O card can support either IP or SDI, providing flexible I/O profiles for demanding multiformat live productions. Each I/O card offers a dual redundant 100G IP interface for superior connectivity for SMPTE ST 2110 or 2022-7, enabling unique I/O configurations and headroom to expand even further in the future. For example, the high bandwidth capabilities of the platform enable UHD super slo-mo workflows that were simply not possible before, unless you deployed a bulky and costly SDI infrastructure.

The I/O card also features 12 compact HD-SDI connections, which are all 12G UHD capable. LiveTouch 2000 is the most advanced, high-performance video server on the market today.

Live Touch 2000 also features ultra-flexible HDR support of up to 24 channels of 1080p or 12 channels of UHD in Rec. 2020. LiveTouch 2000 can also seamlessly handle mixed SDR and HDR inputs and achieve dynamic normalization on output. Many sports productions require multiple deliverables in different resolutions and color spaces — LiveTouch 2000 is the perfect replay solution in a mixed environment allowing ultimate flexibility.

### More content produced quicker

Because seconds matter in live sports, LiveTouch 2000 features a 10G/25G, fast inter-server network called ClipNet, which allows any feed to be made available to any server, instantaneously. This allows operators to quickly select the angles they need and generate instant replays.

In addition, LiveTouch uses Grass Valley's unique FrameMagic technology, giving every frame on the system a unique identity. As operators save or publish highlights and playlists, they appear instantly on the system as a unique asset. This is not a duplicate file. Instead, metadata markers describe which sequence of frames comprise the asset. This allows the same frame sequence to be instantly displayed and used in the highlight library or edit timeline. Replay operators and editors have instant access to each other's media.

**KEY FEATURES**

- Up to 24 HD channels/12 UHD channels in 3 RU
- Scales to meet 4K UHD, 3G and HD productions of any size
- Instantaneous access to content on any server, from anywhere, leveraging fast ClipNet inter-server network and unique FrameMagic technology
- IP native\* — fully SMPTE ST 2110 and NMOS IS-04/IS-05 compliant
- Full super slow motion support at 2x, 3x, 4x and 6x speeds, up to 4K UHD resolutions\*
- FileFlow4 automated processing and orchestration transfers and encodes media faster than real time
- Instant effects and finishing tools
- Redesigned, intuitive and simple touchscreen control panel for fast highlight selection, playlist editing and live playout control
- Efficient use of rack space with higher 4K UHD channel density than other systems
- More online storage than any other system
- Unique multicam grouping and workflows

\*Check for availability

**Advanced super motion support**

LiveTouch 2000 supports a wide range of super motion cameras to support your live sports production. Get ultra-smooth playback from 2x to 10x super motion in HD and 3x super motion in UHD. Super motion inputs are easy to configure via the LiveTouch 2000 web page, saving valuable time before live productions.

**Easy to learn and fast to use**

The LiveTouch interface was designed for users, by users. Operators can mark interest points, create clips and play content to air with real-time speed control. LiveTouch provides fast navigation, on-air playlist editing and easy search and sharing tools. A unique multicam interface provides fast, easy access to all camera angles during live productions.

**Instant editing integration**

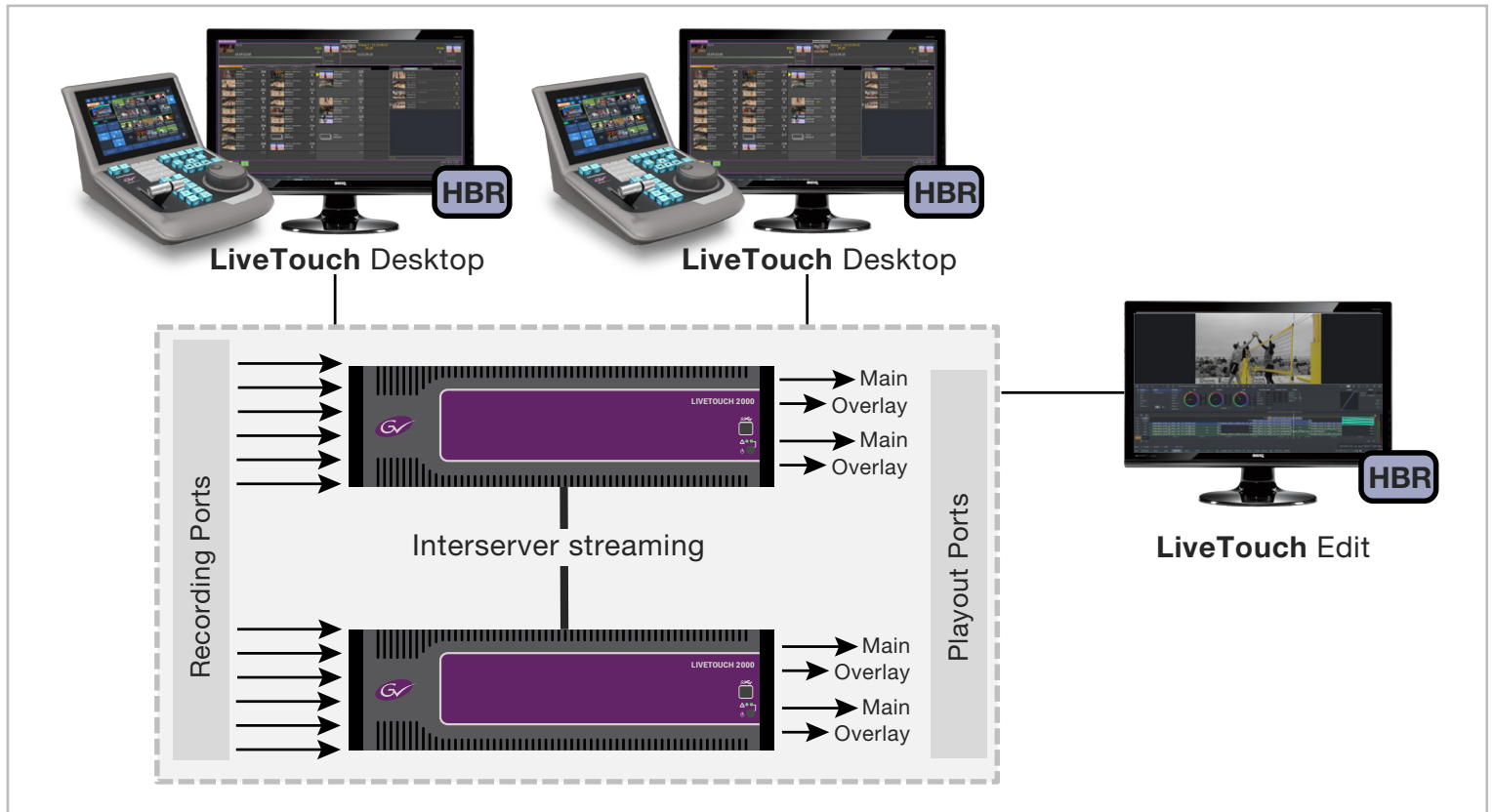
LiveTouch integrates fully with Grass Valley’s editing environment, enabling concurrent operators to instantly create, edit and playout highlight packages.

A rich audio and video editing tool set is accessed from the replay operator’s workstation and can be instantly available for craft editing in Rio, Grass Valley’s high-performance editing, color and finishing system. A full complement of editing tools can be instantly applied with no transfer or transcoding required.

Collaboration can even be extended to users who are not on-site by providing remote access through the Go! production suite, Grass Valley’s browser-based editor.

Seamless integration with external third-party graphics packages provides an additional layer of analysis capability for on-screen highlights and mark up.

**System Architecture**



Multiple LiveTouch desktops with dual servers.

## LiveTouch Manager

LiveTouch is built on a network architecture. The LiveTouch Manager keeps track of every user, server and asset on the network. An open network architecture allows any authorized panel to control any port on any server or numerous ports from different servers simultaneously. The LiveTouch Manager also allows packages and playlists to be instantly searched and shared by any LiveTouchclient connected to the system.

## LiveTouch Server

The technical heart of the system, the LiveTouch Server, records incoming feeds and plays out to air under control of the LiveTouch panel. The server has up to 24 SDI inputs and outputs and can store up to 623 hours of 100 Mb/s HD media internally. The server also features a pair of dual redundant network connections, providing up to 200G of IP throughput, thus making it ideally suited for high-density, high-bandwidth applications such as UHD super slo-mo. The servers' continuous record functionality ensures no shot is ever missed.

The LiveTouch server offers native support for multiple compression formats including AVC-Intra (Class 50 or 100), DNxHD, and XAVC Intra Class 300 UHD. The server supports interserver streaming over 25 Gb Ethernet, allowing a panel controlling an output port on one server to play highlights using a clip being recorded on a different server.

## LiveTouch Panel — Now featuring a completely redesigned UI

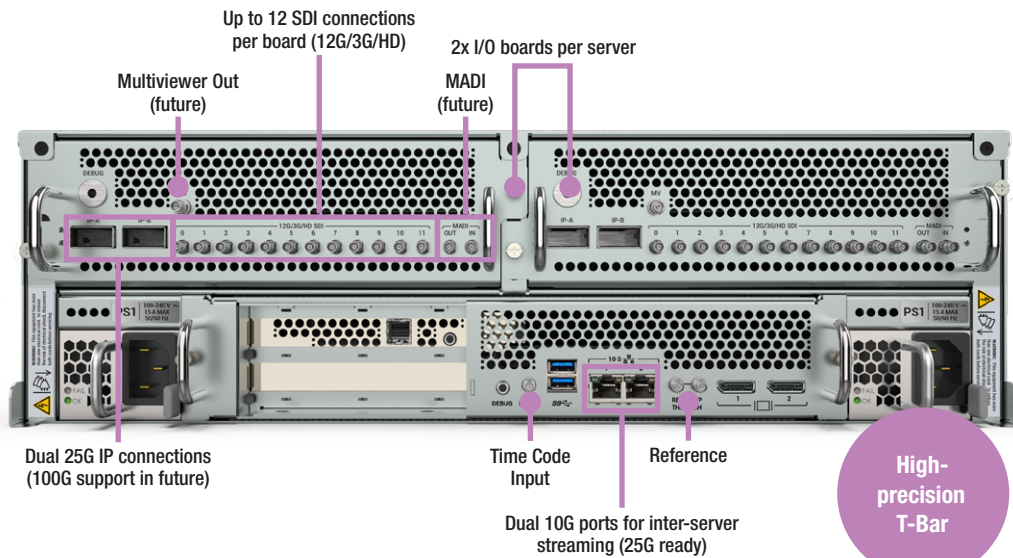
The operational heart of the system, the LiveTouch panel provides fast, intuitive highlight packages and instant replay capabilities.

An intuitive touchscreen provides quick clip selection, unique speed tools and configurable user options. The panel features familiar button placement as well as a number pad for fast navigation by clip number and timecode. A responsive jog/shuttle wheel gives users agile navigation and a high-precision T-bar provides precise control on slow motion playback.

In developing the LiveTouch panel, Grass Valley consulted extensively with sports broadcasters and their on-air operators to ensure that it exactly meets the rigorous needs of live sports production, making the interface easily accessible to any experienced operator.

The new application screen provides clean, fast access to new features such as the favorites screen, help screen, pan and zoom\* and many other upcoming features. While these features are not standalone apps, the app screen provides access to them in a similar way to tablet devices, allowing a familiar platform to users and quicker uptake on new features.

As today's entertainment programs incorporate more fast action, the LiveTouch panel provides the same live action confidence as it does in sports, allowing producers to incorporate live replay for their studio or location audiences with ease. This includes the ability to create highlights packages during live programs to summarize segments before commercial breaks.



\*Check for availability



### 4K UHD Workflows

Not only does LiveTouch offer the highest number of 4K UHD channels per 3 RU server, it also provides the fastest workflow in 4K UHD with the ability to instantaneously to make any angle available to any operator, irrespective of the signal format or size of the system.

LiveTouch is also tightly integrated with Grass Valley's 4K UHD editors, eliminating the need to move media and breaking the physical link between replay and editing workflows. This offers innovative new 4K UHD production workflows completely unique in the industry. Moreover, the 4K UHD essence is stored and accessed as a single 4K UHD XAVC class 300 image rather than Quad HD, which avoids tearing and synchronization complications during layout.



The new thumbnail view allows the operator to view and access more clips at a glance.



The Favourites app allows a quick access to your favorite content.

## SPECIFICATIONS

## 3G/HD

Number of channels: up to 24

## Formats:

AVC-Intra (Class 50/100)  
XAVC  
DNxHD

## 4K UHD

Number of channels: up to 12

## Formats:

XAVC Class 300

## HDR\*

## Standards supported:

HLG  
PQ-10  
S-Log3 Pass-through  
Color space conversion on output  
Re-sizing on output

## Video Input/Output Format

IP: SMPTE ST 2110-20/30/40/50

3G/HD-SDI: SMPTE ST 424-2006, ST 292-1998

12 Gb single-wire I/O: SMPTE ST 2082

## Loop Recording

Included

## Layout

Mix/wipe effects on playback  
Mix/wipe effects on single channel  
Upconvert/downconvert between resolutions

## Slow Motion

Super motion support  
HD super slow-mo supported: 2x, 3x, 4x, 6x

## Audio Embedded Audio Tracks

16 per channel

## Control Panels

Control panels per server: 4  
Network enabled  
Built-in touchscreen

## Workflow

Built-in file import/export: LT Client  
In-server editing  
In-server craft editing  
Multicam I/O included

## Control Protocols

VDCP  
GPI/O

## Mechanical Specifications

Size: 3 RU  
Dual power supplies, hot swappable

## Storage

## Internal storage:

Express 1: 6x 1.6 TB SSD disks  
Express 2: 6x 3.2 TB SSD disks  
Pro: 6x 3.2 TB SSD disks  
Elite: 12x 3.2 TB SSD disks

## Storage:

Up to 623 hrs internal (HD)  
Up to 148 hrs internal (UHD)

## Network:

Dual 10 GB network card (ClipNet/inter-server streaming)  
Dual 25 GB/100 GB\* QSFPs (Main inputs/outputs)

## System Reference

Black burst, tri-level sync, PTP

## ORDERING

Servers	LiveTouch 2000 Express 1	LiveTouch 2000 Express 2	LiveTouch 2000 Pro	LiveTouch 2000 Elite
Ordering code	LT2-EXPRESS	LT2-EXPRESS 2	LT2-PRO	LT2-ELITE
HD channels	Up to 8	Up to 8	Up to 16	Up to 24
UHD channels	—	Up to 4	Up to 8	Up to 12
Super slo-mo*	Optional (3x HD only)	Optional (3x HD only)	Optional (3x HD, 3x UHD)	Optional (6x HD, 3x UHD)
Internal storage	6x 1.6 TB SSD	6x 3.2 TB SSD	6x 3.2 TB SSD	12x 3.2 TB SSD
SMPTE ST 2110*	Supported	Supported	Supported	Supported
Inter-server streaming (ClipNet)	Dual 10 Gb Fiber or Dual 10 Gb Copper	Dual 10 Gb Fiber or Dual 10 Gb Copper	Dual 10 Gb Fiber or Dual 10 Gb Copper	Dual 10 Gb Fiber or Dual 10 Gb Copper
I/O boards** (up to 2 per server)	1	1	2	2
Codec modules per I/O board** (up to 4 per I/O board)	1	2	2	4
Bundles	LT2-EXPRESS server	LT2-EXPRESS 2 server	LT2-PRO server	LT2-ELITE server
Ordering code	LT2-EXP-PKG	LT2-EXP2-PKG	LT2-PRO-PKG	LT2-ELITE-PKG
ISA (database) + LiveTouch Manager (1 required per system)	Included	Included	Included	Included
LiveTouch Panel	1 included	1 included	1 included	1 included

\* Check for availability

\*\* Check for supported configurations

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