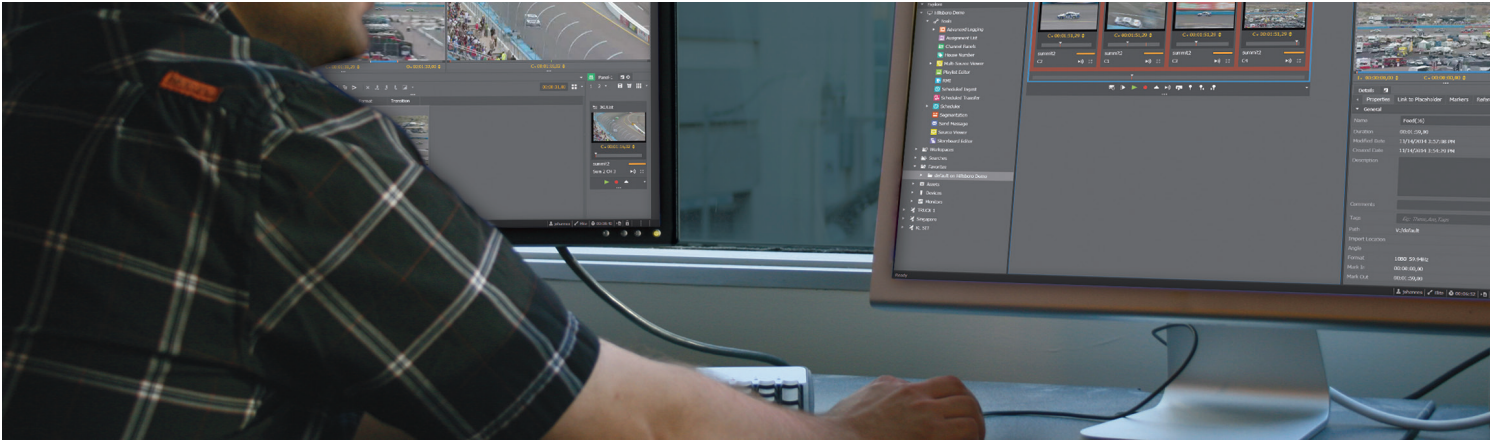


GV STRATUS

Video Production & Content Management System



The GV STRATUS Video Production & Content Management System from Grass Valley, a Belden Brand, is the most complete and versatile application environment for nonlinear production. Developed to adapt to the rapidly changing business, operational and technology needs of the modern media enterprise, GV STRATUS is a flexible, evolvable software-centric approach that changes the way creative talent works together to efficiently produce rich, high-value content.

GV STRATUS answers the quest of modern media enterprises for a unified, adaptable workflow framework that empowers their creative talent, while at the same time preserves their investment in technology over time.

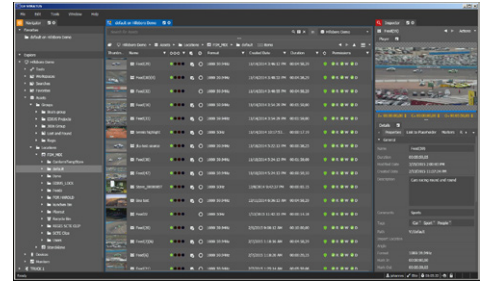
When you work with K2 media servers and storage, GV STRATUS provides a unified, expandable foundation for new applications and workflows. The tools within the GV STRATUS application framework can be adopted in an almost infinite number of combinations, meaning GV STRATUS can be tailored to studio production, play-to-air, news and many other broadcast and video production environments.

Operationally, GV STRATUS opens up a new user experience paradigm, with the potential to break down the traditional silos of users, technologies and tasks. Individual users can tailor their GV STRATUS desktop environment according to the task at hand. At the workgroup level, GV STRATUS enables collaborative workflows where everyone has access to every clip on the network with the tools required to manage the content. In this way, GV STRATUS allows the media enterprise to optimize workflows by consolidating roles for efficiencies, while at the same enabling a team and cross-organizational collaboration.

GV STRATUS

Video Production & Content Management System

A unified, evolvable and agile software platform with a common user experience across different usage models.



As production companies adopt nonlinear production techniques, combining the tools from acquisition through production, post production and distribution into a common platform becomes essential.

GV STRATUS is the first practical IT-centric, service-oriented architecture implemented for the specific needs of various broadcast environments, initially targeting live event, sports, playout and the news markets. It is based on a unique, desktop-based paradigm, combining production tools, device control and asset management into a single, highly configurable multitasking user interface. This lets individual users tailor their GV STRATUS desktop environment according to the task at hand. At the workgroup level, GV STRATUS enables collaborative workflows where everyone has access to every clip on the network with the tools required to manage the content. The state-of-the-art service oriented architecture (SOA) at the foundation of GV STRATUS allows the creation of tools as plug-ins, each providing a specific base function, thus guaranteeing exceptional software performance.

GV STRATUS interacts with the K2 Summit family of media server and storage products to provide a unified content model for all asset management use cases and an expandable foundation for new applications and workflows.

GV STRATUS uses the basic functional tools in an almost infinite number of combinations, meaning GV STRATUS can be tailored to studio production, play-to-air, news and many other broadcast and video production roles.

GV STRATUS advances production workflows in significant ways. This includes the ground-breaking combination of content management and device control, superior proxy workflow support with video/multichannel audio proxies created “on-the-fly” in K2 Summit and production tools such as Channel Panel used for synchronized multichannel play and record.

As an advanced software platform, GV STRATUS enables the rapid rollout of new features and production tools, including tools that segment and publish assets to multiple platforms. This extensibility is not limited only to Grass Valley solutions. While Grass Valley EDIUS can be used for both proxy editing (including voiceovers) and high-resolution editing, Adobe Premiere Pro CC, Avid Media Composer and Apple Final Cut Pro 7 can also be integrated for a similar type of high-resolution craft editing. All of these editors can be integrated either by performing file transfers of both content and metadata, or edit-in-place, while growing from a K2 SAN infrastructure with no transfers needed. GV STRATUS also interfaces with other production systems such as transcode engines, archive systems and newsroom computers. A powerful web service API (RESTful web API) is available for specific integration requirements or to develop innovative production tools.

GV STRATUS Tools

GV STRATUS provides an application framework in which each user can decide what tools to use and how to arrange them on the screen. Additionally — and uniquely to GV STRATUS — new releases do not require a complete software build, but rather just a set of features and tools added into the framework.

The current set of GV STRATUS tools include:

Advanced Logging Panels:

- Create custom panels with logos, metadata and keyboard shortcuts for logging content live or after the fact
- Compatible with USB button boxes and touch-screen LCDs
- Live logging which allows for metadata tagging as it happens
- Create user-customizable button panels with background images, containing buttons laid out in any format/size

Assignment List:

- Create placeholders for clips and coordinate with rundown stories on newsroom computer systems and with GV STRATUS Rundown

Channel Panel:

- Direct play/record control of a K2 Summit or K2 Solo channel with hotkeys
- Includes live streaming proxy for confidence monitoring
- Channel Panels can be ganged/unganged by drag-and-drop

Dashboard Monitoring:

- Monitor storage capacity available on K2 devices
- Monitor quota usage
- Monitor channel state and usage
- Monitor system statistics

House Number:

- Populate the house number list
- Link assets to house numbers from the traffic system

Ingest Scheduler:

- Support for up to 160 recording channels
- Includes live streaming proxy from the K2 client, eliminating the need for hardware to view the input to the K2 channel
- Includes router control for dynamic port allocation
- Schedule ingest events up to one year in advance
- Customizable interface for fast decision making

Scheduled Transfer Tool:

- Automate the export of the record train, even while it is being ingested, according to a GV STRATUS-managed schedule
- Transfer entire clips, or segments
- Target formats: MXF, GXF & MOV

Inspector:

- Play video/audio of any clip or ingest event — full-resolution or proxy
- ShuttlePRO support
- Review/create/add metadata including keywords

Navigator:

- Explore assets in GV STRATUS system (local or remote)
- Explore all files on user file system
- Import/export/transfer
- Explore devices under GV STRATUS control
- Explore tools available to the GV STRATUS user

Permissions

- Access control (read, write and delete) for users and groups on a per-bin, per asset and per meta-data field level
- Specific (read, write and delete) access controls are provided for markers and segmentations against assets

Playlist Editor:

- Create and modify playlists

Removable Media Interface:

- Ingest media from Panasonic P2, Sony XAVC, Sony XDCAM, Sony XDCAM EX and JVC XDCAM EX
- Merge clips on import while preserving individual markers
- Support for the latest cameras

Segmenting and Publishing:

- Segment assets
- Transcode assets and export to external publishing platforms
- Export the H.264 proxy natively, without the need to transcode
- Publish directly to YouTube channels

Send Message:

- Send and receive messages and attachments between GV STRATUS application users

Source Viewer:

- Play assets
- Controls for adding markers, keywords and other features

Storyboard Editor:

- Cuts-only editing with easy drag-and-drop interface
- Save finished job as playlist to K2 Summit or K2 Solo — no rendering
- Rough cuts can be directly opened by EDIUS, Final Cut Pro 7 and Premiere Pro

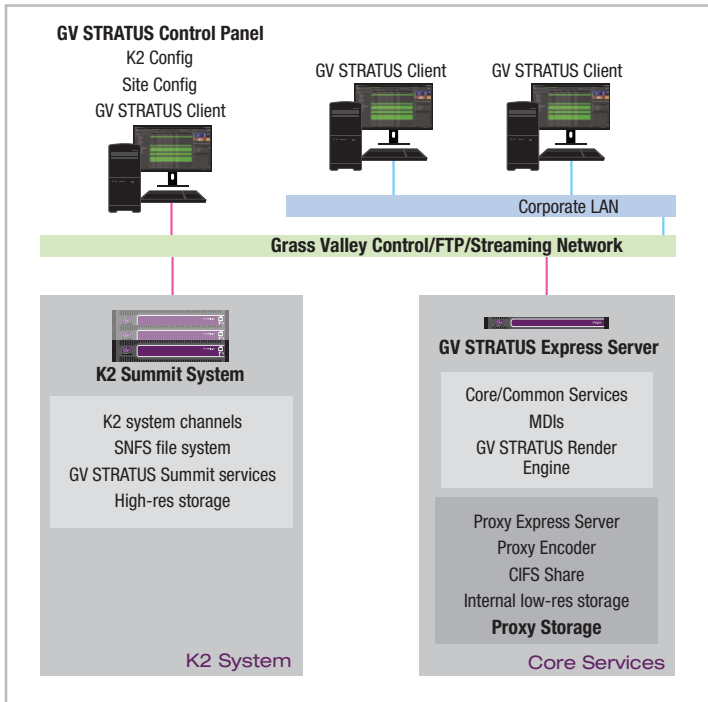
KEY FEATURES

- Complete and adaptable production workflows — media production tools to assist ingest, editing, content aggregation, logging, transfer and playout:
 - User permissions provide access rights and control for groups and users to read, write, delete or be denied access to media content
 - Permissions can be applied to metadata fields
 - Manage assets by configuring bins/folders to best suit particular workflows
 - High-resolution or proxy access to shared storage content
 - Three proxy compression qualities available, up to 720p HD, as standard. Custom proxy sizes are supported, from 320x280 to 1920x1080 resolution, up to 15 Mb/s
 - 32-channel audio proxy support (for proxy files scavenged by GVRE)
 - Create custom panels for logging assets live or post event
 - Prepare and publish assets to digital media platforms
 - Assignment list tools with linkage to NRCS and GV Rundown
 - User-friendly operations of K2 system channels
 - Feed ingest scheduler with read-only mode for non-ingest operators
 - Transfer scheduler facilitates the pre-planned movement of content to offline or removable storage, or to other network destinations
 - Live streaming proxy monitoring of input and output of K2 channels
 - Efficiently assemble and edit playlists
 - Populate and ingest files from multiple removable media devices
 - Send messages and attachments between multiple GV STRATUS users
 - Play assets and add markers and keywords
 - Choice of destinations and formats to send finished edited material, either to K2 storage or external destinations
 - Storyboard editing with instant on-air playback
 - Play clips or ingest events in full-resolution or proxy
 - Review, create and add metadata
 - Powerful search functions — including search for “Is Empty” in all fields
 - Rules engine allows user-friendly set up of automated workflows to transfer, export, import, transcode and delete assets, according to specific criteria
 - Intuitive navigator panel to explore assets, devices and tools
 - Set and monitor file system based quotas
 - Manage transfer, import and export of files, including integration with file transfer acceleration solutions, such as Aspera FASP protocol
 - Import/export QuickTime, MXF and GXF files
 - Configure YouTube exports directly from GV STRATUS
 - Export native H.264 proxy up to 1920x1080 resolution without transcoding
- User workspace management — configure preferences and recall individual user interface built for each task
- Monitor storage capacity/channel status on K2 system
- Rules engine foundation enables auto-rule actions to automate workflow tasks
- Choice of mainstream craft editors: Grass Valley EDIUS, Apple Final Cut Pro 7, Adobe Premiere Pro CC and Avid Media Composer (stand-alone, with Avid ISIS or Avid Interplay)
- EDIUS XS editing of proxy assets with offline media — allows low-resolution editing of assets still in the archive
- WAN-based workflows that enable multisite media processing from GV STRATUS clients across distributed facilities and from remote field locations
- Thanks to our integration with Aspera, media can be transferred across geographically distributed locations via the FASP high-speed transport mechanism
- RESTful API available to third parties for new tool/application development — support of licensing and support agreements with selected partners and system integrators
- Professional Services expertise to provide workflow consulting and manage deployments and commissioning
- GV STRATUS server components supplied as VMWARE ESXI images to run on approved customer-furnished hardware and ESXI server infrastructure
- Intelligent background resource management to balance the load between service providers such as transcode engines, proxy encoders, archive providers, FTP transfer servers, etc, so that system resources are always optimized and system administrators can monitor system load
- EDIUS Project Management: browse through and search for EDIUS projects and contained sequences from the GV STRATUS navigator Share work/projects among different editors. Import standalone EDIUS projects as GV STRATUS-managed projects

GV STRATUS/K2 Media Enterprise Network

Combining K2 media servers and storage with GV STRATUS provides a unified, expandable and collaborative foundation for nonlinear production.

The K2 series of servers and storage provides broadcast-optimized IT infrastructure for a broad range of broadcast media environments. Teamed with GV STRATUS, the various components of the K2 systems can be configured in a variety of ways into customer-specific solutions.



Small GV STRATUS System

A small GV STRATUS system is characterized by proxy stored on a Core Services server that includes the role of Proxy Server. The GV STRATUS Core Services server has internal storage to store proxy media. The server provides a CIFS share that GV STRATUS client PCs mount for access to the proxy.

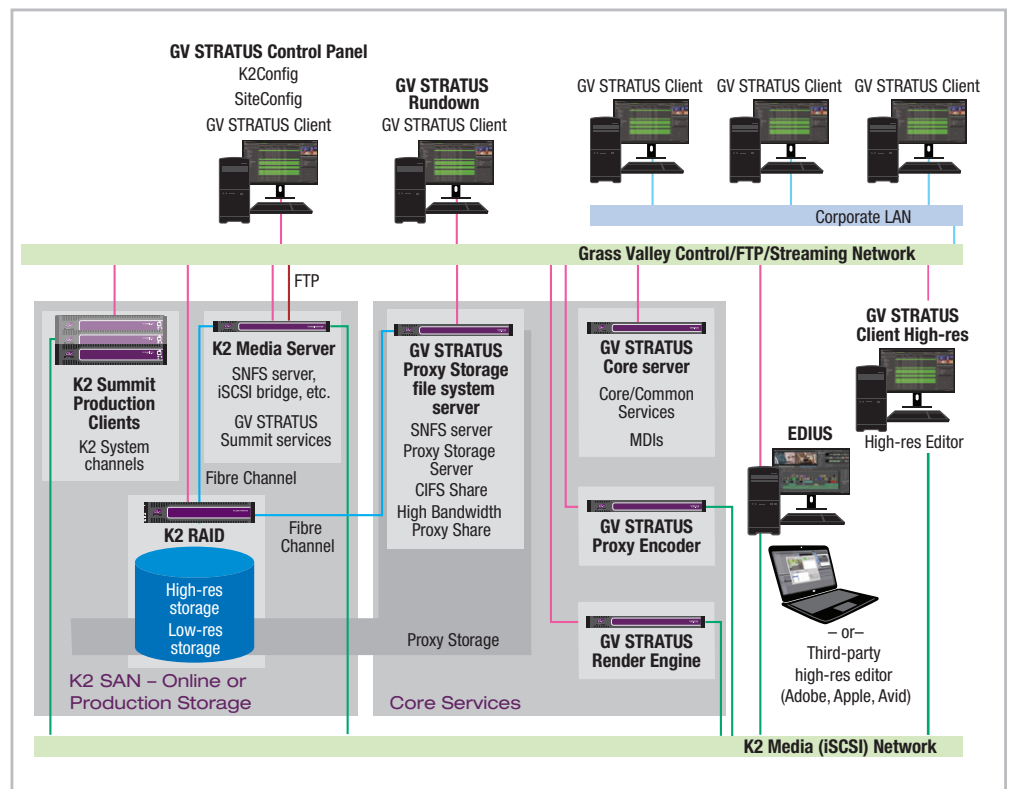
This type of small GV STRATUS system is designed for a basic workflow and can consist of a standalone K2 system, a GV STRATUS Core Services server and one or more GV STRATUS client PCs. Client PCs that are connected to a corporate LAN or to the control network use a proxy media workflow. At least one PC must host the GV STRATUS Control Panel application. A designated PC on the control network hosts the SiteConfig application.

Medium GV STRATUS System

A medium GV STRATUS system is characterized by proxy stored on the online or production K2 SAN.

Attached to the K2 SAN is a Core Services server which has the role of Proxy Server. This Proxy Server provides access to the low-resolution proxy media stored on the K2 SAN. This server provides a CIFS share that GV STRATUS client PCs mount for access to the proxy.

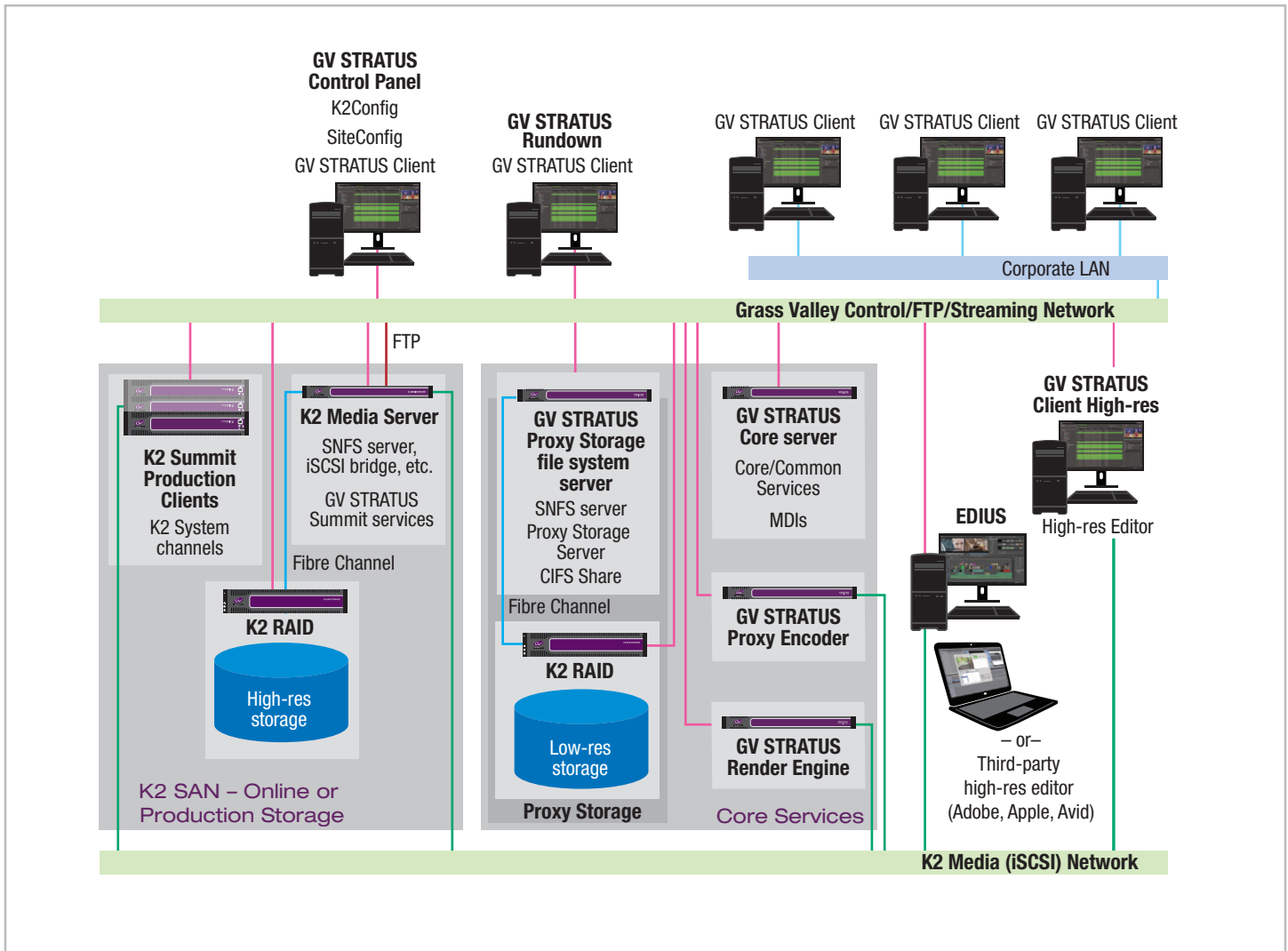
This type of medium GV STRATUS system is designed for a typical workflow and consists of a K2 online or production SAN, multiple GV STRATUS Core Services servers and multiple GV STRATUS client PCs. Client PCs that are connected to a corporate LAN or to the control network use a proxy media workflow. Client PCs that are connected to the media (iSCSI) network use a high-resolution media workflow. At least one PC must host the GV STRATUS Control Panel application. A designated PC on the control network hosts the SiteConfig application and the K2Config application.



Large GV STRATUS System

A large GV STRATUS system is characterized by proxy stored on a dedicated Proxy Storage system. The Proxy Storage system is similar to a K2 Nearline configuration. The Proxy Storage system stores the low-resolution proxy media. One GV STRATUS Core Services server has the role of Proxy Server. This Proxy Storage file system server provides a CIFS share that GV STRATUS client PCs mount for access to the proxy.

This type of large GV STRATUS system is designed for a large-scale workflow and consists of a K2 online or production SAN, a Proxy Storage system, multiple GV STRATUS Core Services servers and multiple GV STRATUS client PCs. Client PCs that are connected to a corporate LAN or to the control network use a proxy media workflow. Client PCs that are connected to the media (iSCSI) network use a high-resolution media workflow. At least one PC must host the GV STRATUS Control Panel application. A designated PC on the control network hosts the SiteConfig application and the K2Config application.



SPECIFICATIONS

Proxy on Capture

MPEG-4 part 2 up to 1.5 Mb/s proxy encoding (1 video + 8 audio tracks)

Low-Resolution Desktop Client System Requirements

Intel Core i3 -2120 3.3 GHz, 4 GB RAM, 80 GB 7,200 RPM system drive, CD-ROM drive, DirectX 9 compatible

Integrated or discrete HD graphics with 256 MB of memory minimum

Single Ethernet 1000 Base-T network interface

Windows 7/10 (32/64-bit)

High-Resolution Desktop Client System Requirements

Two Intel Xeon 5410 Quad Core 2.33 GHz, 4 GB RAM, 100 GB 7,200 RPM system drive, CD-ROM drive, DirectX 10 compatible

Integrated or discrete HD graphics with 512 MB of memory minimum

Dual Ethernet 1000 Base-T network interface or Single Ethernet 100 Base-T + Fiber Channel interface

Windows 7 (64-bit)

Video

NTSC, 525/59.94 (240, 248 or 256 active lines per field)

PAL, 625/50 (288 active lines per field)

HD 1080i/720p 50/60 Hz and 1080p 50/60 Hz

Proxy: MPEG-4, 1 Mb/s for video and 64 kb/s for each audio track up to 8

Proxy Scavenge

Default settings:

Low: 512x288, H.264, 1 Mb/s (pre-version 4.x proxy quality)

Medium: 720x480, H.264, 3 Mb/s

High: 1280x720, H.264, 5 MB/s

With the introduction of version 4.8, custom proxy sizes are supported, from 320x280 to 1920x1080 resolution, up to 15 Mb/s

Timecode

Captured from high-resolution asset file

Non Fault Tolerant Server Physical Dimensions

Chassis: standard EIA rack mount

Dimensions:

Height (1 RU): 4.26 cm (1.68 in.)

Width: 48.24 cm (18.99 in.) (includes rack latches)

Depth: 77.2 cm (30.39 in.) (includes PSU handles and bezel)

Weight: 16.3 kg (36 lbs.)

Power Requirements

Power: 502 watts

Voltage: 100-240 VAC

Fault Tolerant Server Physical Dimensions

Chassis: standard EIA rack mount

Dimensions:

Height (4 RU): 17.8 cm (7 in.)

Width: 48.3 cm (19 in.) (includes rack latches)

Depth: 73.6 cm (28.97 in.) (includes PSU handles and bezel)

Weight: 52 kg (114.64 lbs.)

Power Requirements

Power: 1390 watts

Voltage: 100-240 VAC

ORDERING

This section describes the modular components that comprise a GV STRATUS system. These components interact with the K2 server and storage infrastructure, to form combinations of solutions that best meet customer-specific technical, operational and business requirements.

GV STRATUS Clients

Designed as one application capable of supporting many different usage models, a GV STRATUS client can be configured for every type of user in a media facility, whether for feed scheduling, storyboard editing, channel control, media management or playlist playout. The GV STRATUS tools function as a client to the GV STRATUS Core Services, running on a standard Windows operating system computer. If the PC is connected as an iSCSI client to the K2 SAN, the GV STRATUS tools and the EDIUS Elite editors have access to high-resolution media. This requires a high-resolution GV STRATUS license. If the GV STRATUS client PC is not connected as an iSCSI client, such as on a distributed K2 system, the GV STRATUS tools and the EDIUS XS editors access low resolution live streaming and proxy media.

GV STRATUS Servers

These servers are the primary devices that support GV STRATUS system functionality and services. They can be configured in a variety of ways to support the use case requirements of specific environments. Variants of GV STRATUS servers include the following:

GV STRATUS Express server – A GV STRATUS server with all the roles necessary for a basic GV STRATUS system, including the role of Proxy Express Server. This server is designed for use on smaller GV STRATUS systems where no other GV STRATUS servers or proxy systems are present.

GV STRATUS Core server – A GV STRATUS server that has the role of Core Services on a system with multiple GV STRATUS servers. The server provides media management functionality, including the GV STRATUS database and associated software components.

Proxy server – The GV STRATUS server use with an online or production K2 SAN that provides access to the low-resolution proxy media stored on the SAN. The server has the role of Proxy Storage Server and shared file system client.

Proxy Storage file system server – The GV STRATUS server on a dedicated Proxy Storage system that provides access to the low resolution proxy media stored on the system. The server has the roles of Proxy Storage Server and shared file system server for the Proxy Storage system.

GV STRATUS Render Engine – A server dedicated to performing proxy encoding, conform and rendering services, to transcode complex assets, such as a GV STRATUS sequence, into a single clip. This service also renders EDIUS projects when exported or sent to playout.

Workflow Server – A GV STRATUS server dedicated to hosting the Workflow Engine Service, the Rules Engine Service and the Transcode Control Engine Service. These services support rules-based operations.

A Fault Tolerant (FT) GV STRATUS server is an enhanced platform designed to reduce the risk of system failure in mission-critical media production environments.

GV STRATUS Virtualization

GV STRATUS server components supplied as VMWARE ESXI images to run on approved customer-furnished hardware and ESXI server infrastructure.

Updated for GV STRATUS version 4.8

Partners and Integrators

GV STRATUS was conceived to facilitate agile integration of new capabilities and tools, and to attract a broad array of technology providers, business partners and system integrators.

With GV STRATUS, Grass Valley can efficiently and regularly add new software components to preserve the system investment and help users upgrade to the most advanced content creation tools quickly and easily. However the inherent extensibility of the GV STRATUS platform is not limited to integrating Grass Valley's own solutions. The GV STRATUS framework is adaptable to provide a consistent service-oriented model for both internal and third-party software modules, and for rapid integration with best-of-breed technologies.

When needed, Grass Valley can integrate third-party applications and integrate them into user- and segment-specific solutions, while enabling cost-effective implementation, deployment and support in the field.

Third-party Technology Partners

As media companies transition to new technologies and accommodate best-of-breed technologies from a diversity of suppliers, the agility of the GV STRATUS platforms helps them to efficiently evolve their media networks in an economical manner.

Grass Valley partners with many of the industry's significant technology providers, to integrate with systems such as traffic, asset management, editing and archive. GV STRATUS currently interfaces with a number of other production systems.

Editing System Integration

While Grass Valley EDIUS is the best choice for both proxy editing (including voiceovers) and high-resolution editing, Apple Final Cut Pro 7, Avid Media Composer and NewsCutter and

Adobe Premiere Pro CC can also be integrated for the same type of high-resolution craft editing. All of these editors can be integrated either by performing file transfers of both content and metadata, or edit-in-place when using the GV STRATUS plug-in.

Archive HSM Integration

Archive interfaces make content repurposing easy and practical. The GV STRATUS framework interfaces with SGL Flashnet, Front Porch Digital DIVArchive, Masstech and generic FTP storage.

Newsroom Computer Systems

A series of archive, conform and metadata management enhancements in GV STRATUS addresses the unique production needs of the newsroom. This functionality, when combined with AP ENPS, Octopus, Avid iNEWS, Annova OpenMedia or other newsroom computer systems (NRCS), permits users to access all of their GV STRATUS tools within the NRCS — streamlining the entire news production process. These new tools also facilitate the unlimited sharing of clips and content creation tools between collaborative workgroups or individual users.

Digital Media Platforms

Grass Valley's Ignite automated production system is tightly integrated with GV STRATUS to streamline publishing to digital media platforms. Under GV STRATUS control, users can add metadata, segment assets and SCTE markers so that they are automatically prepared for VOD and live streaming content replacement for advertising, embargoed material and regional variations. GV STRATUS currently interfaces with downstream

SDI live streaming engines from Anvato and Capella.

GV STRATUS can natively export H.264 files to web platforms without the need to transcode. However, should different formats be required, GV STRATUS can be integrated with leading third-party transcoders, including Harmonic ProMedia, Elemental Live and Telestream Vantage systems.

High-Speed File Transfer Solutions

GV STRATUS provides the ability to export/import material in an automated fashion across global distances, with speeds far exceeding conventional TCP-based technologies. Grass Valley's collaboration with Aspera, an IBM company, and the integration of their Fast Adaptive and Secure Protocol (FASP) transport technology into GV STRATUS workflows, makes it possible to carry out collaborative media production on a truly global basis.

Solution Partners and Integrators

By offering software APIs, the GV STRATUS framework attracts a rich ecosystem of integration partners and third-party application and solution developers.

A powerful web service API (RESTful web API) is available for third parties to implement specific integration requirements or to develop innovative production tools. To implement these types of projects, Grass Valley executes licensing and support agreements with selected technology and business partners and with system integrators.

GV STRATUS Services – Defining, Deploying and Supporting Solutions for Nonlinear Production Tools

The performance of a broadcast enterprise can't be impacted by any interruptions, including technological glitches, workflow inefficiencies or mistakes caused by insufficient training.

That's why Grass Valley Global Services offers a full spectrum of Professional Services, Training and comprehensive Customer Support, which ensures successful ownership and operation of Grass Valley solutions. With advanced architectural services, proven methodologies, preventative support and priority response, your operations are optimized and maximized, so broadcast environments run leaner, smoother and more aligned with business priorities.

Professional Services

Define, design and deploy solutions that meet business goals. When partnering with Grass Valley Professional Services, a team of experts comes along as part of the interaction. From initial concept and architecture definition, to implementation and management, they will help realize solutions that address the unique processes, workflows and infrastructure requirements necessary to meet business objectives.

Enhance the quantity and quality of organizational resources. Meet and exceed end-to-end project requirements that ensure getting it right the first time.

Ensure productive workflows and operational efficiencies are in place and designs maximize available budget. Gain increased productivity leading to a measurable quicker return on investment.

Migrate workflows off legacy systems to new architectures. Enjoy the advantages of new technologies.

Move swiftly from purchase to production. Accelerate the steps from build — to integrate — to operate.

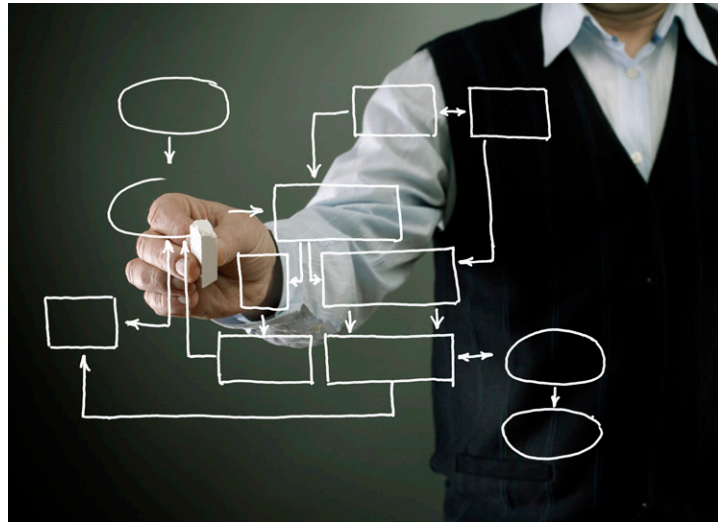
Training

Get maximum value from Grass Valley solutions. With on-site, online, factory-based and customized education, your organization gains the knowledge and skills to meet its operational and technical support needs. Expert-led courses are designed for operators and maintenance engineers, with a combination of theoretical learning and hands-on exercises.

Support Agreements

Get ahead of the game and take proactive steps to support all operational aspects. With Grass Valley Customer Support, investments are protected, uptime requirements are met and system performance is maintained and enhanced. Elite, Basic and Custom Agreements are straightforward and easy-to-understand.

The Elite Support Agreement is designed for critical environments where uptime is demanded and rapid problem resolution is a must. This agreement provides 24x7 technical phone support, call center prioritization, service level commitments, defined fault resolution processes, free software updates and upgrades and advance parts exchange. With an Elite Support Agreement, media production environments achieve both operational efficiency and financial predictability.



GLOBAL SERVICES PROVIDES:

- Unequaled 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



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