What sets us apart

- Global HQ in Montreal
  25+ locations worldwide
- Unmatched global reach,
  making any interaction
  fast and local
- The widest and deepest
  range of best-in-class
  solutions
- Over 360 patented
  innovations
- 24/7/365 online and
  local service
  and support
- More than 500 R&D
  technologists worldwide
- 33 Technical Emmy
  awards
Grass Valley
Senior Leadership Team

Neil Maycock
Chief Marketing Officer and General Manager, Playout

Fabrizio Alcobe
Chief Human Resources Officer

Christian Bernard
Chief Supply Chain Officer

Tim Ordaz
Chief Information Officer and PMO Leader

Eve Hodnett
Chief Legal Officer, General Counsel

Tim Shoulders
Chief Executive Officer and President, Interim Chief Commercial Officer

Michael Hofer
Chief Financial Officer

Sydney Lovely
Chief Technology Officer and General Manager, Networking

Marco Lopez
General Manager, Live Production
Go-To-Market

Our resellers, system integrators and distributors support our broad technology and solutions portfolio with regional presence.

Trained and supported by Grass Valley, they are committed to customer business success as valued experts providing objective insight and complete solution sets.
### Stable, long-term, blue-chip customer relationships

#### Key highlights
- Decades-long relationships with major broadcasters
- Global services and support footprint

#### Strong brand recognition
- 300+ multi-year service agreements
- Strong customer retention driven by mission criticality and brand reputation

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**Grass Valley serves 90% of the world’s broadcasters**

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<table>
<thead>
<tr>
<th>Diverse, blue-chip customer base</th>
<th>Strong brand recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Broadcasters and networks (80%)</strong></td>
<td><img src="Disney.png" alt="" />, <img src="ESPN.png" alt="" />, <img src="FOX.png" alt="" />, <img src="Discovery.png" alt="" />, <img src="astro.png" alt="" />, <img src="BBC.png" alt="" />, <img src="Tegna.png" alt="" />, <img src="QBO.png" alt="" />, <img src="CBC.png" alt="" />, <img src="NBC.png" alt="" />, <img src="SBG.png" alt="" /></td>
</tr>
<tr>
<td><strong>Service Providers (18%)</strong></td>
<td><img src="NEP.png" alt="" />, <img src="GameCreek.png" alt="" />, <img src="Storm.png" alt="" />, <img src="Arena.png" alt="" />, <img src="SMG.png" alt="" />, <img src="broadCast.png" alt="" />, <img src="DFN.png" alt="" />, <img src="HDR.png" alt="" /></td>
</tr>
<tr>
<td><strong>New Media &amp; eSports (2%)</strong></td>
<td><img src="Amazon.png" alt="" />, <img src="Microsoft.png" alt="" />, <img src="YouTube.png" alt="" />, <img src="LinkedIn.png" alt="" />, <img src="Blizzard.png" alt="" />, <img src="Riot.png" alt="" />, <img src="FACET.png" alt="" />, <img src="Tencent.png" alt="" /></td>
</tr>
</tbody>
</table>

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1. Revenues from Top 50 customers in 2015 - 2017
2. Includes broadcast service providers and integrators
3. Devoncroft 2018 Big Broadcast Survey
Extending GV Customers’ Purchasing Power

**GV TECHNOLOGY ALLIANCE**

- **Increased Portfolio Depth**
- **Pre-certified Interoperability**
- **Greater Efficiency in Purchase and Deployment**
Extending GV Customers’ Purchasing Power
Grass Valley and Black Dragon Capital

THE PERFECT ALLIANCE

Grass Valley
- Stable, profitable market leader
- Brand heritage and global reach
- Trusted by a loyal client base
- Comprehensive suite of products and solutions
- Broad product portfolio and opportunities
- Passionate and dedicated workforce committed to the industry and its customers

Black Dragon
- Unmatched operational expertise in broadcast technology
- Proprietary tools that lay out a clear path to full realization of potential and long-term success
- History of exemplary returns on invested capital
- Extremely dedicated and focused team of industry advisors and professionals
GV Core Segments

Value Stream

**Live Production**

**Live Sports**
Video capture and production for live sporting events including cameras, editing and signal transmission, typically broadcast immediately with the lowest latency possible

**Production**

**News & Entertainment**
Video capture and curation for news, game shows and special events. Typically broadcast within a few hours of recording and with a higher percentage of pre-produced content than Live Sports

**Distribution and Delivery**

**Linear Playout**
Manages creation of television channels through IT-based integrated control to insert ads, graphics and create and edit schedules

**Ingest, archive, edit and MAM**

**Playout, OTT**

Live acquisition, cameras, switching, replay
Live: Venues

A complete portfolio of solutions for stadiums, arenas and other live venues

- Do More with Less - engage the live audience with in-venue screens and social media 2nd screens, as well as the external broadcast audience from a single automated workflow

- Simplified Content Creation in UHD and HDR – Well-known operational models produce multi-format content packages fast and effortlessly

- Coordinated Workflow Integration - acquire and replay up to 8x slow-mo with automated metadata management and content publishing from within the production workflow
Live: Remote/At-Home

Consistently better live content with fewer resources

- Do More with Less - produce high-end live programming with the least amount of equipment and personnel on site required by any Remote/At-Home solution on the market
- Open-Standard IP Workflows - utilize industry-recognized standards for full operational transparency across the IP network
- Work the Way You Want - position control panels and frames where you need them to match production requirements

NEW LDX 100
MV-821 IP
GV Fabric
Maverik
GV AMPP
LiveTouch
Live: Mobile

The most in-demand production solutions for live events of any size

- The Industry Leader - Grass Valley live production solutions are found in 78% of all OB trucks and 94% of 4K UHD-capable vehicles in North America

- Multiformat Production - all Grass Valley Mobile/Live Production systems can mix and match video and audio formats as needed (SDI/IP, HD/UHD, SDR/HDR)

- Simplified IP Workflows - support for open standards and IP I/O throughout the Grass Valley portfolio guarantees interoperability with all compliant systems
Live: Studio

Elevated productivity in all studio environments

- Precision Control - automate best-in-class live event production control solutions or take manual control at any time, removing complexity and allowing operators to focus on creativity.

- Format Flexibility - shoot, edit and distribute any type of content – HD/4K UHD, SDR/HDR, SDI/IP – anywhere – linear, OTT, web or social media.

- Increased Efficiency, Reduced Cost - save up to 50% on the time and cost it normally takes to build dynamic live production events with zero compromise on quality.
Production

Put your production team in the driver’s seat

- Speed to Air - get to viewers first, deliver content to second screens and interface with social media applications from a single, unified workflow that allows you to use the editor of your choice

- Creative Freedom - desktop, web-based and cloud-based editing tools with comprehensive compression/video format support fostering creativity and enhanced collaboration from anywhere

- Future proof - deploy an open standards IP-ready infrastructure purpose-built for the changing demands of news operations, sports highlight shows and other types of live programming
Playout

The widest range of solutions for your playout environment

- Operational Flexibility - run playout operations on COTS servers, or in a private or public cloud; adapt easily to 4K UHD and HDR video formats

- Workflow Efficiency – single point of control for previously discrete functions in cutting-edge IP-based systems, elevate channel-to-operator density

- Business Resiliency - take advantage of flexible licensing, add new options and capabilities only when needed, transfer costs from CAPEX to OPEX
IP Networking

The industry leader in open-standards IP infrastructure

- Open Standards - committed to industry standards such as SMPTE ST 2110, AMWA IS-04/05 and AES67

- Broadest IP Portfolio - the industry’s widest selection of glass-to-glass IP solutions, from cameras to playout servers

- Peace of Mind – scalable, proven systems with all the performance and resilience you expect in a mission-critical live production workflow
GV Portfolio Covers Majority of Broadcast Workflow
## Video Consumption is Changing

<table>
<thead>
<tr>
<th>VIDEO CONSUMPTION IS CHANGING</th>
<th>CREATING CHALLENGES FOR OUR CUSTOMERS</th>
</tr>
</thead>
</table>
| **LIVE BROADCAST**  
63% of television ad spend is allocated to live events vs. pre-produced content | **BECOME MORE EFFICIENT** |
| **VIDEO QUALITY**  
51% CAGR of UHD televisions installed (2016 – 2021) | **PRODUCE MORE CONTENT** |
| **VIDEO FORMATS**  
26% CAGR of over-the-top subscribers (2014 – 2017) | **DELIVER CONTENT ON MULTIPLE PLATFORMS** |
Commercial Dynamics

- More Platforms
- Cost Complexity
- More Consumption
- Production & Rights Cost
- Increased Competition

TV Subs → TV Ads → Low OTT Revenues → Margin Pressure
## Media Experiencing Digital Disruption

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Industry Need</th>
<th>GV Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing Rate of Content Creation</td>
<td>2X - 4X</td>
<td>Agile &amp; Scalable On Demand Systems</td>
</tr>
<tr>
<td>Exponential Growth of Digital Platforms</td>
<td>&gt;10X</td>
<td>Unified Workflows for Playout &amp; Distribution</td>
</tr>
<tr>
<td>Continued Increase in Content Consumption</td>
<td>+50%</td>
<td>Leverage Assets via Innovative Workflows</td>
</tr>
<tr>
<td>Media Tech Budgets Have Not Kept Pace</td>
<td>+3% - +4%</td>
<td>Enterprise Pricing for Improved Economics</td>
</tr>
</tbody>
</table>
GV Media Universe
Produce Anywhere … Distribute Everywhere

Universal User Experience

Marketplace
- Application Marketplace
- Services Marketplace
- Content Marketplace

Elastic Media Applications

Connected Apps/Devices
- Connected Applications
- Connected Devices
- Connected Communities

Agile Media Processing Platform
- Agile Management Tools
- Elastic Platform Services
- Intelligent Media Technologies

Universal Deployment
- Public Cloud
- Private Cloud
- Hybrid Cloud
Introducing AMPP

Grass Valley’s Media Processing Platform for building Agile Media Solutions

**Agile** Save and Restore Factories Instantly

**Elastic** Utilize Media Services On-Demand

**Flexible** Deploy in Public Cloud, Private Cloud or Hybrid

**Scalable** Resilient and Secure Web-Scale Technology

**Nimble** New Services Released Continuously, CICD
Utilize AMPP media services deploy and change media workflows instantly
Build Connected Solutions with GV Technology

Leverage your investment in Grass Valley Technology

Applications

GV STRATUS
Shading

ITX
Switching

EDIUS
Replay

Compute
Routing

Storage

Networking
On-Air Today!

Launch Partner Blizzard Entertainment with Overwatch League

Showcasing Elastic Master Control on Amazon Web Services

GV AMPP democratizes cloud-based production with DeTune
GV AMPP Team

More Than 100 Years of Industry Experience

Ian Fletcher
Chief Applications Architect

Claudia Souza
GV AMPP Director, Business Development

Mike Cronk
VP, Advanced Technology

Larissa Goerner
GV AMPP Director, Product Management

www.grassvalley.com/solutions/ampp/

Learn More - Request Private Demo
Enterprise Agreements

- Establishes Grass Valley as the preferred vendor for your organization
- Each agreement is crafted individually based on the organization’s needs
  - Agreements often include hardware refreshes
  - Greater commitments to Grass Valley the result in greater savings

<table>
<thead>
<tr>
<th>Four Basic Components</th>
<th>Volume Pricing: Progressive volume-based pricing for all software clients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bundling: Ability to save more with option to bundle multiple client applications</td>
</tr>
<tr>
<td></td>
<td>Multi-Year Agreements: Ability to save more with multi-year terms</td>
</tr>
<tr>
<td></td>
<td>Peak Management (Bursting): Provision for capacity burst to handle peak loads</td>
</tr>
</tbody>
</table>
GV AMPP Playout

Flexible, Scalable, Cloud-first Playout Solution

Ultimate Agility
Spin up/down linear channels as needed in a matter of minutes with AMPP elastic compute

Cloud First
Host in cloud or on-premise and control channels from any location. Scale from 1 to hundreds of channels

Safe and Secure
World-class protection of systems & content with 'self-healing' microservices architecture
GV Orbit
IP Control, Configuration & Monitoring

The industry’s only control system built from the ground up to support IP

Simplified Network Configuration
System auto-recognizes devices on the network and automates provisioning

Intuitive Broadcast Workflows
Mimics traditional SDI control workflows reducing learning curve to near zero

Dynamic System Orchestration
Build, configure and change systems on the fly for rapid and efficient deployment or re-purposing
### IP Made Easy

The only true Glass-To-Glass IP solution in the industry

<table>
<thead>
<tr>
<th>Open Standards</th>
<th>GV Fabric COTS Switch</th>
<th>Trusted Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadest IP portfolio from cameras to playout servers</td>
<td>Fully non-blocking COTS IP switch tuned for broadcast</td>
<td>More Open-Standards based IP deployments than any other solutions provider</td>
</tr>
</tbody>
</table>
LDX 100 Native IP Camera

The ultimate live sports, remote/at-home camera

Native IP, No Base Station Required

Simply connect and discover audio, video, and control

High-Speed UHD

Capture the emotion and detail of the action with 3X high-speed in UHD

New Ergonomic Design

Improves in-field performance
K-Frame XP
Single Stream, Full Raster IP Production Switcher Engine

No Compromise Performance
No reduction in I/O count or processing capability, regardless of format HD, 3G or 4K UHD

Unleash Your Creativity
True 4K single-stream, full raster processing means all 6 M/E's and 6 full keyers are available for 4K UHD productions

Powerful Small Footprint
80x40 I/O in compact 8-RU frame handles all IP, all SDI or any combination
LiveTouch 1300

All New Native IP Replay System Built for Mobile Productions

- **Multi-format production**
  - Dual 50 Gbps IP
  - Single stream 4K HD, 3G or 4K UHD

- **Creative Simplicity**
  - Built-in SDR/HDR up/down/xross mapping removes complexity

- **New Frame**
  - Built to withstand demanding mobile environments
Kula AV

All-in-one Audio and Video production switcher for single operator productions

Multi-function Convenience
Panel combines audio, video, graphics and craft editing for unparalleled flexibility

Save Space and Time
Compact 2-RU package ideal for tight spaces – On-board FormatFusion3 eliminates need for external conversion

Cost-Efficient Performance
Ideal for non-broadcast applications such as corporate video, houses of worship and education
Kahuna Production Switcher

Format-agnostic in 4K UHD with built-in cross-conversion and cross-mapping

Unparalleled Format Flexibility
Easily manage I/O in any format or HDR type with FormatFusion3 and FormatFusion4

Integrate Into Your IP Workflow
IP connectivity supporting 2110 and NMOS with single-stream IP for I/O

Increased Versatility
Web API interface for smooth integration with LiveTouch plus graphics from ChyronHego and RT Software
**XIP-3901 Software-Defined Signal Processor**

**NEW 4K UHD Up/Down/Cross Conversion**
Kaleido IP / MV-821-IP / IQUCP-MV

The industry’s widest selection of IP multiviewer solutions

Maximize Operational Flexibility

Open-standards based, easily deployed, fully interoperable with other devices

Freedom of Choice

Low latency IP monitoring for any application or environment

Stay Connected

Remote streaming options enable monitoring from anywhere at any time
GV STRATUS One
Express and Pro, all-in-one production solutions

Create Efficiently
Ingest, Manage, Edit, Store, Transcode, Distribute all in a single 2-RU platform

Simplify Distribution
Rapidly deliver content to multiple platforms, even social media, with a single click

Easily Deployed
Integrated package deploys in hours, freeing up more time for creativity
GV Pace
Tablet-based Production Automation

Increase Production Efficiency
Make assisted automation easier than ever with increased power and simplified control

Easy Operation
Single-operator execution enabled by a smooth HTML-5 UI running on any network-connected device

Enhance Any Workflow
Industry’s best integration of third-party devices means less disruption and easy deployment
GV Gaming & Polling

Audience interactivity solution

Drive Audience Engagement

Monetize content while strengthening viewer loyalty by making them part of the action

Uses Your Current Graphics

Native integration with major broadcast graphics workflows and supports HTML5 for social and OTT

Elevate Your Brand on 2nd Screen

Tailor your brand identity with customizable templates for real-time games and polls
Thank You

Join the Conversation

www.grassvalley.com