

# sQ 1000 Series Media Servers



## SD/HD/4K UHD Media Servers Designed for News and Sports Editing, Replay and Playout

The sQ 1000 Series is an intelligent, scalable and media optimized storage system. Based on a real-time operating system and a robust and reliable design, sQ servers can deliver sustained multiyear 24x7 operation for high-pressure fast-turnaround workflows for news and sports.

The broadcasting landscape has never been so competitive and full of opportunities for true media innovators. Today there are more ways to reach more people on more devices, in many more places. Grass Valley is the perfect partner to help you to fully realize these opportunities — with file-based workflows in SD, HD and 4K UHD. We have enormous experience in helping forward-looking broadcasters around the world deliver great news, sports, home shopping — in fact any fast-turnaround programming. The sQ 1000 Series of media servers distributes high-quality broadcast content across an array of delivery platforms quickly and efficiently.

The sQ Server is a production unit, designed to work with moving images and sound. It is engineered to work within an IT infrastructure, but it understands media.

### Media Production Server

The sQ Server is a compact 3 RU video storage server containing all the components required for acquiring, storing and managing content in a shared production workflow.

The sQ Server is supplied in two variants, one with internal storage and the other which supports one or up to four external storage units. They are known as sQ 1200 and sQ 1800 respectively. The 3 RU sQ 1800 has its external storage in a 2 RU chassis.

The sQ 1200 and sQ 1800 are otherwise functionally identical, supporting the full range of workflows. The sQ 1200 contains a single RAID set of 7 data and 1 parity disks. The sQ 1800 uses external SAS eBOD and contains 24 disks split across three RAID sets in a RAID-30 arrangement. RAID-30 is

specifically designed for high-bandwidth file transfers and high availability, as demanded by video production systems. The servers and RAID units have dual power supplies and the disks are hot-swappable.

### Production Zones Provide Resilient Scaling

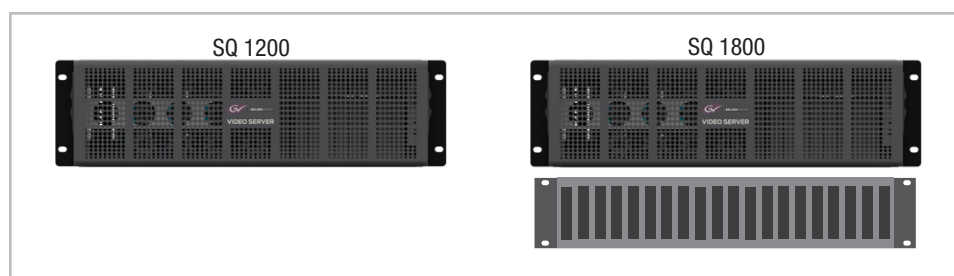
sQ Servers are configured into resilient production units, called Zones. A Zone may be built of one or more sQ 1200 or sQ 1800 units, to provide scaling of ingest and output ports, bandwidth to support editing workstations and video storage capacity.

A Zone is managed by a resilient management unit we call an ISA (integrated server architecture) Manager, which is a Windows application running on a dedicated pair of resilient servers, as shown above.

Production systems requiring extensive video handling may be constructed with multiple Zones for additional resilience. Communications between the ISA Managers ensures that users have access to all content across the Zones.

A scaled solution requires both broadcast-quality files and an associated proxy (H.264) to be created simultaneously and managed as strictly and carefully as the synchronization between pictures and sound. This is a key function of the sQ Server and the associated ISA Manager — both qualities of media are guaranteed to remain locked together. An editing selection made in one is instantly and automatically conformed in the other.

The sQ Server lays down the media on the RAID storage, with every frame (or group of frames) identifiable. This is the key to the speed of editing provided by Grass Valley media production suite.



## FileFlow 3.1 — File Exchange Between IT Infrastructure and sQ Servers

FileFlow is an option for sQ that provides automated or manual ingest/export of many broadcast camera or file formats to and from sQ. FileFlow can export essence files using either the same native sQ codec (transwrap) or transcode to one of many different file formats and codecs.

FileFlow uses a client/server architecture via HTTP RESTful API to control and monitor the queue and status of file I/O jobs being processed.

### What's New?

- 12G SDI, 16-channel audio
- 4K UHD 2160p50/59.94
- XAVCi Class 300 & 600 Mb/s codecs
- HDR native I/O support for PQ10, HLG and S-Log3

### Storage

- Uses 6G SAS controller and the latest SAS drives
- 8x storage in 2/3 space than previous generation of sQ
- 3x disk performance than previous generation of sQ
- sQ 1200 has internal storage around 200 HD hours\*1 or 38 4K UHD hours\*2
- sQ 1200 has two SSD options:
  - 8x 1.6 TB (38 4K UHD hours)\*2
  - 8x 3.2 TB (76 4K UHD hours)\*2
- sQ 1800 has external (2 RU) storage around 600 HD hours\*1 per array
- Up to 4 arrays per server for a massive 2,400 HD hours\*1 per sQ 1800

\*1 HD hour = 1 hour of AVCi 100 Mb/s + 8ch 24-bit 48 kHz audio

\*2 4K UHD hour = 1 hour of XAVCi 600 Mb/s + 8ch 24-bit 48 kHz audio

### Server Options

- Up to 12x 3G I/O 1080i ports
- Up to 8x 3G I/O 1080p ports
- Up to 4x Quad 3G I/O 2160p ports
- Up to 4x 12G I/O 2160p ports
- 12G I/O includes 4x 3G ports per card
- FileFlow Manager and Engine for sQ File I/O including transwrapping and transcoding
- Redundant ISA Manager
- iMON monitoring

### Software Option – sQ Record

- sQ Record supports direct recording from SDI feeds, including VTRs via RS-422 control
- sQ Record provides automatic recording according to preset times
- sQ Record creates broadcast-quality clips and automatic proxies

### Software Option – sQ Play

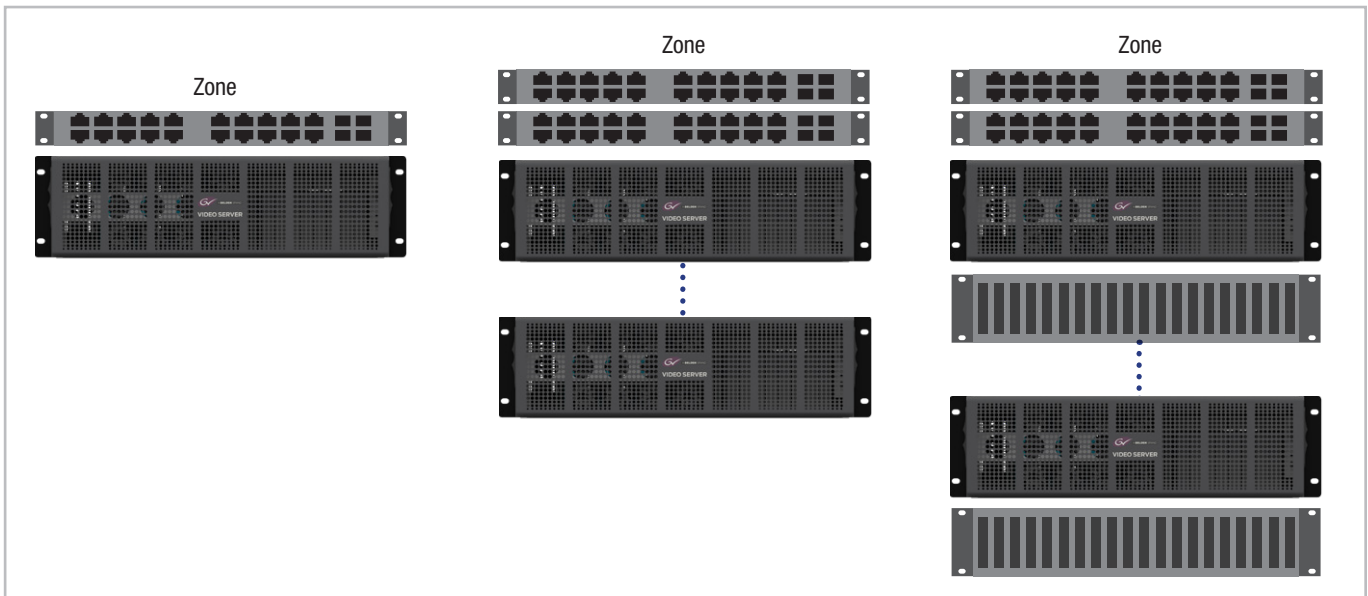
- sQ Play manages up to four channels of playout with options to integrate with NRCS via MOS gateway
- sQ Play is driven directly from its host PC or via a dedicated on-air control panel

### Software Option – sQ Load

- sQ Load is a desktop bulk ingest tool for loading P2, XDCAM, XDCAM EX and XAVC files
- sQ Load ingests content in batches and converts according to sQ preferred format

### Software Option – Editing

- sQ Cut is a simple desktop editor for basic story telling in news and sports
- Rio is available as a turnkey or software solution for editing and finishing for SD, HD and 4K UHD



**KEY FEATURES**

- 100% compatible with existing sQ servers
- sQ 1000 series is the most compact video server with 12 3G SDI ports
- 4K UHD Configurations using 12G SDI or Quad 3G
- sQ 1200 has internal storage around 200 HD hours or 38 4K UHD hours on HDD, and 38 or 76 4K UHD hours on SSD
- sQ 1800 has external (2 RU) storage around 600 HD hours per array
- Up to 4 arrays per server for a massive 2,400 HD hours per sQ1800
- 16 channels of 16/24-bit 48 kHz audio support
- 2.5x faster than real time for file ingests and delta frames
- Software-based codecs, DVCPRO HD, AVCi, XAVCi and DNxHD
- Dual 10G or 4x1G Ethernet network
- Easy migration to IT infrastructure via sQ FileFlow
- MXF, MOV, MP4, H.264 file wrapper support via sQ FileFlow
- FileFlow Manager and Engine for sQ File I/O including transwrapping or transcoding
- HDR 10-bit native I/O support for PQ10, HLG and S-Log3

**SPECIFICATIONS**

**Mainframe**

3 RU, front loading  
 Individual card cooling  
 sQ 1200 has internal SAS storage  
 Dual redundant hot-swap PSUs  
 Simple back panel layout

**Main System Connections**

**sQ SAS Array**

External storage array providing up to 600 HD hours\*1  
 24x 1.8 TB enterprise class SAS drives  
 RAID-30: 3x (7+1 parity)  
 12 Gb SAS interface  
 Dual PSU

Up to 4 sQ SAS arrays per sQ server providing 2,400 HD hours\*1  
 Easily expand storage capacity by adding more sQ SAS arrays – no restriping required  
 Mix and match latest 1.8 TB drive arrays with previous 900 GB drive arrays

**Formats and Standards Supported**

HD/4K UHD Formats – all in 50/59.94 Hz  
 XAVCi Class 50 & 100: 720p, 1080i, 1080p, Class 300, 2160p  
 AVCi Class 50 & 100: 720p, 1080i, 1080p  
 DVCPRO HD: 720p, 1080i  
 DNxHD 720p, 1080i, 1080p 8/10-bit  
 SD Formats – all in 50/59.94 Hz  
 IMX 30/40/50: 625i or 525i  
 DVCPRO 25/50: 625i or 525i  
 Low Bit Rate (LBR) Codecs  
 MPEG-1 (1.5 Mb)  
 MPEG-4/H.264 SD (2.5 Mb)  
 MPEG-4/H.264 720p (12 Mb)

HDR unrestricted mixed format on playout including support for PQ10, HLG and S-Log3 conversion from existing 4K UHD or HDHDR media

Comparison Table			
Feature	sQ 1200	sQ 1200 12G	sQ 1800
<b>Size</b>	3 RU	3 RU	3 RU + 2 RU per array
<b>Storage</b>	Internal HDD, max 200 HD hrs*1 or max 38 4K UHD hrs*3 Internal SSD (optional) max 38 or 76 4K UHD hrs*3		External, 600 HD hrs*1 per array. Max 2,400 HD hrs*1
<b>External storage array</b>	0		1 to 4
<b>Video ports</b>	12 (3G) 1080i or 8 (3G) 1080p or 4 Quad (3G) 2160p	12 (3G) 1080i or 8 (3G) 1080p or 4 (12G) 2160p	12 (3G) 1080i
<b>3G SDI</b>	Yes	No	Yes
<b>12G SDI*2</b>	No	Yes	No
<b>HDD Disks</b>	Yes	Yes	Yes
<b>SSD Disks</b>	Yes	Yes	No
<b>Max audio channels</b>	16	16	16
<b>Browse create</b>	2-3 x real time per engine, multiple engines		
<b>Network</b>	Dual 10 Gb Ethernet or Quad 1 Gb Ethernet		
<b>Video formats</b>	SD, 720p, 1080i, 1080p, 2160p		SD, 720p, 1080i, 1080p
<b>Compression</b>	IMX, DVCPRO, DVCPRO HD, AVCi & XAVC Class 50, Class 100 and DNxHD		
<b>Codec technology</b>	FPGA Hardware		

\*1 HD hour = 1 hour of AVCi 100 Mb/s + 8 ch 24-bit 48 kHz audio

\*2 12G and 4K UHD I/O requires internal SSD drives

\*3 4K UHD hour = 1 hour of XAVCi 600 Mb/s + 8 ch 24-bit 48 kHz audio



**ORDERING**

**sQ Mainframes**

**FGASQ 213601006**

sQ 1800 Server External Storage (Inc. software, Exc. SAS Array)

**FGASQ 213601016**

sQ 1200 Base Server Internal Storage (Inc. software, Exc. 8 Disks)

**FGASQ 213601046**

sQ 1200 12G Base Server Internal Storage (Inc. software, Exc. 8 Disks)

**sQ I/O Cards**

**FGASQ 213610012**

2 Browse 720p/1080i Engines DVCPRO using MPEG-1

**FGASQ 213610015**

2 Browse 720p/1080i Engines DVCPRO using H.264

**FGASQ 213610018**

2 Browse 720p/1080i Engines AVC/DVCPRO using MPEG-1

**FGASQ 213610021**

2 Browse 720p/1080i Engines AVC/DVCPRO using H.264

**FGASQ 213610024**

2 Browse 1080p Engines AVC/DVCPRO using H.264

**FGASQ 213610011**

2 Port 720p/1080i Bidirectional card DVCPRO & MPEG-1 Browse

**FGASQ 213610014**

2 Port 720p/1080i Bidirectional card DVCPRO & H.264 Browse

**FGASQ 213610017**

2 Port 720p/1080i Bidirectional card AVC/DVCPRO & MPEG-1 Browse

**FGASQ 213610020**

2 Port 720p/1080i Bidirectional card AVC/DVCPRO & H.264 Browse

**FGASQ 213610029**

2 Port 720p/1080i Bidirectional card AVC/DVCPRO & MPEG-1/H.264 + Browse Engine

**FGASQ 213610033**

2 Port 720p/1080i Bidirectional card AVC/DVCPRO & H.264 Browse + Browse Engine

**FGASQ 213610023**

2 Port 1080p Bidirectional AVC/DVCPRO & H.264 Browse

**FGASQ 213610031**

4 Port 720p/1080i Input card AVC/DVCPRO & H.264 Browse

**FGASQ 213610032**

4 Port 720p/1080i Output card AVC/DVCPRO

**FGASQ 213610054**

Extra Thumbnail Generation card 1080p & 2160p

**FGASQ 213610040**

1 Port 2160p Input card XAVC

**FGASQ 213610041**

1 Port 2160p Input card XAVC with Browse Engine

**FGASQ 213610042**

1 Port 2160p Output card XAVC

**sQ Networking/Miscellaneous**

**FGASQ 213610003**

Quad 1 Gb Network Card (Clipnet)

**FGASQ 213610004**

10 Gb Dual Fiber Network Cards (Clipnet)

**FGASQ 213610026**

10 Gb Dual Copper Network Cards (Clipnet)

**sQ Storage**

**FGASQ 213610052**

Internal HDD Storage (8x 1.8 TB disks / 14.4 TB). Provides ~200 hours storage of 100 Mb media

**FGASQ 21361005601**

Internal SSD Storage (8x 1.6 TB disks / 12.8 TB). Provides ~40 hours storage of 600 Mb media

**FGASQ 21361005701**

Internal SSD Storage (8x 3.2 TB disks / 25.6 TB). Provides ~80 hours storage of 600 Mb media

**FGASQ 900114**

SAS Array (1.8 TB disks / 43.2 TB) without SAS adapter. Provides ~600 hours storage for 100 Mb media

**FGASQ 635301**

SAS Adapter

**ISA System Components**

**SQ-634-247**

First Site ISA Manager (redundant dual server) database & management application (includes first Server ISA license, 1x sQ Play software & 1x sQ Rec software)

**SQ-634-241**

ISA Manager

**SQ-634-255**

ISA Browse Manager (additional 25 desktop clients)

**FileFlow Options**

**FGASQ 212210111**

FileFlow Manager – software only

**FGASQ 212210112**

FileFlow Engine dual stream (edge browse) – software only

**LT-2122-10-124**

FileFlow Engine (edge browse) software and PC

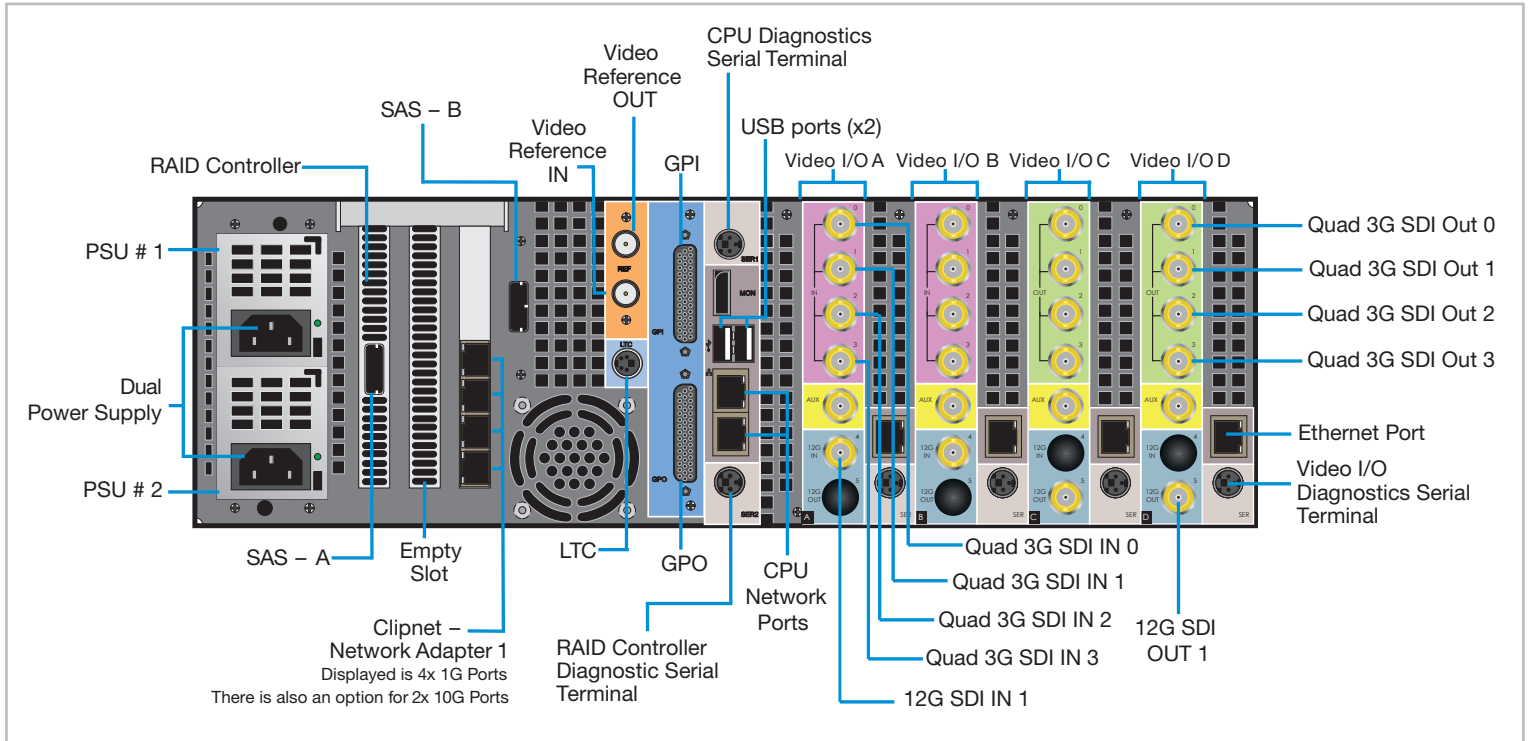
**LT-479-264**

Resilient FileFlow Manager – turnkey (3x PCs)

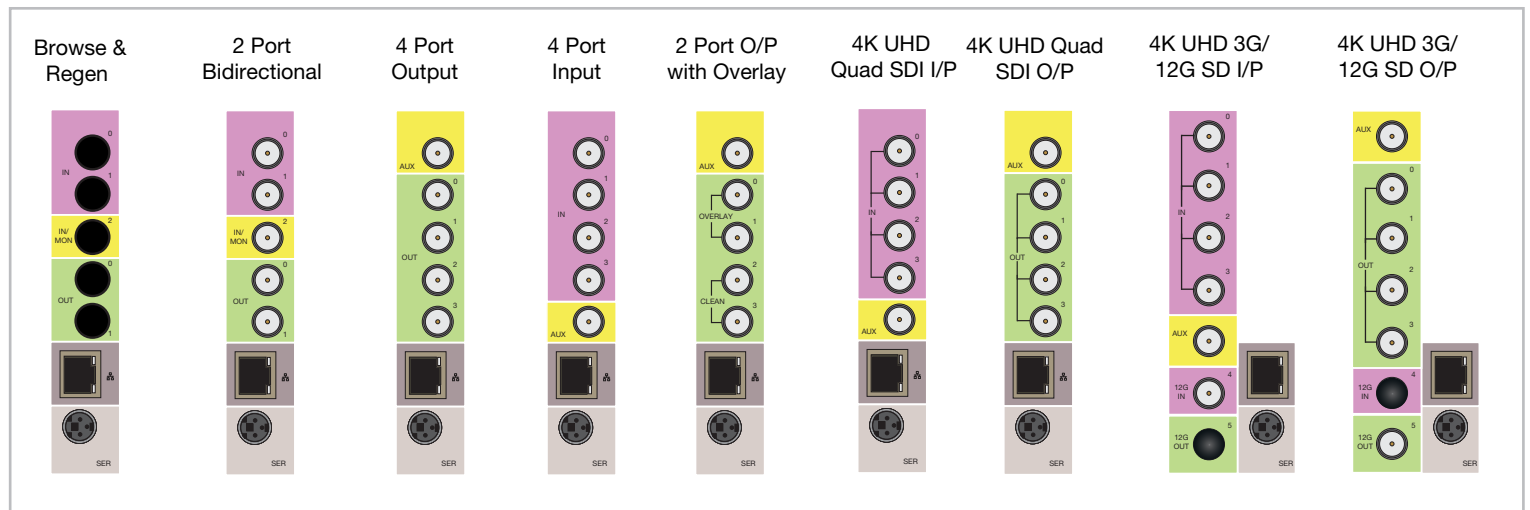
**FGASQ 643003**

Resilient FileFlow Manager – software only

sQ SDI Configuration



Input/Output 3G & 12G Options



DS-PUB-2-0716C-EN



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