

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

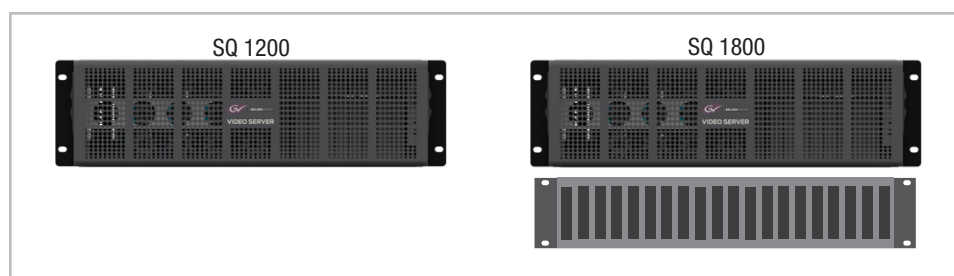
sQ Servers are configured into resilient production units, called Zones. A Zone may be built of one or more sQ 1200 or sQ 1800 units, to provide scaling of ingest and output ports, bandwidth to support editing workstations and video storage capacity.

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

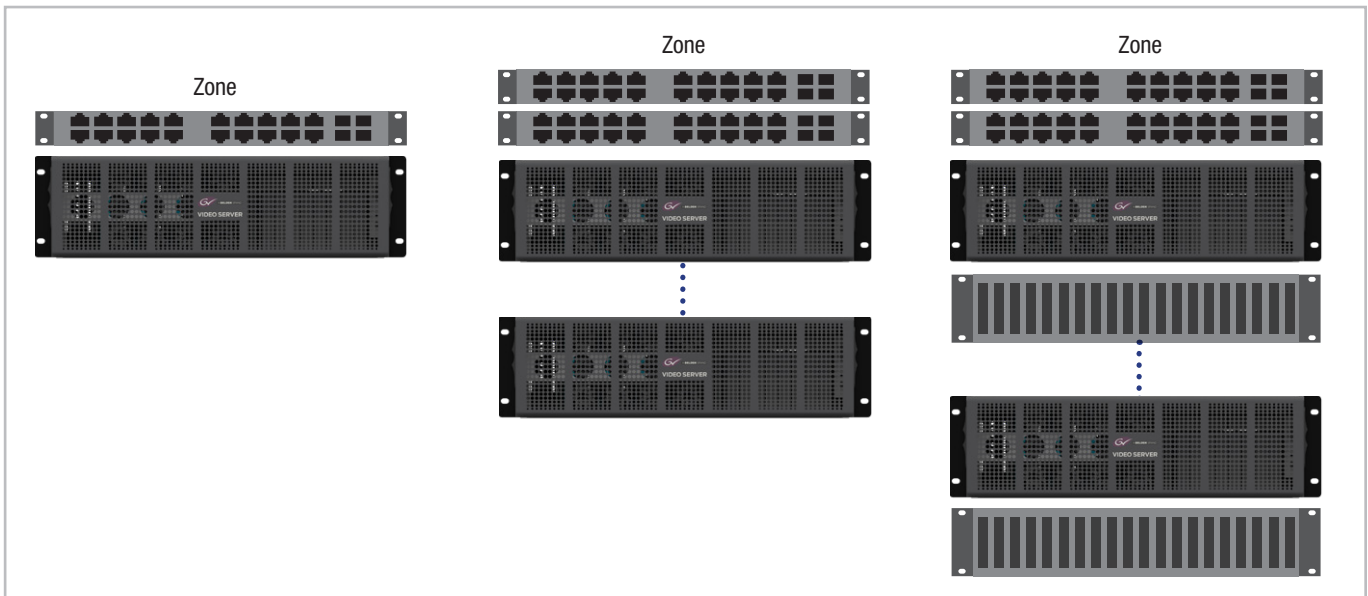
- sQ Play manages up to four channels of playout with options to integrate with NRCS via MOS gateway
- sQ Play is driven directly from its host PC or via a dedicated on-air control panel

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
Size	3 RU	3 RU	3 RU + 2 RU per array
Storage	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
External storage array	0		1 to 4
Video ports	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
3G SDI	Yes	No	Yes
12G SDI*2	No	Yes	No
HDD Disks	Yes	Yes	Yes
SSD Disks	Yes	Yes	No
Max audio channels	16	16	16
Browse create	2-3 x real time per engine, multiple engines		
Network	Dual 10 Gb Ethernet or Quad 1 Gb Ethernet		
Video formats	SD, 720p, 1080i, 1080p, 2160p		SD, 720p, 1080i, 1080p
Compression	IMX, DVCPRO, DVCPRO HD, AVCi & XAVC Class 50, Class 100 and DNxHD		
Codec technology	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

FGASQ 634245

First Site ISA Manager and database & management – software only (includes first Server ISA license, 1x sQ Play software & 1x sQ Rec software)

FGASQ 634245

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

FGASQ 634240

ISA Manager (redundant dual server) database & management application (includes first Server ISA license)

FGASQ 634250

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

FGASQ 212210113

FileFlow Manager software and PC

FGASQ 212210114

FileFlow Engine (edge browse) software and PC

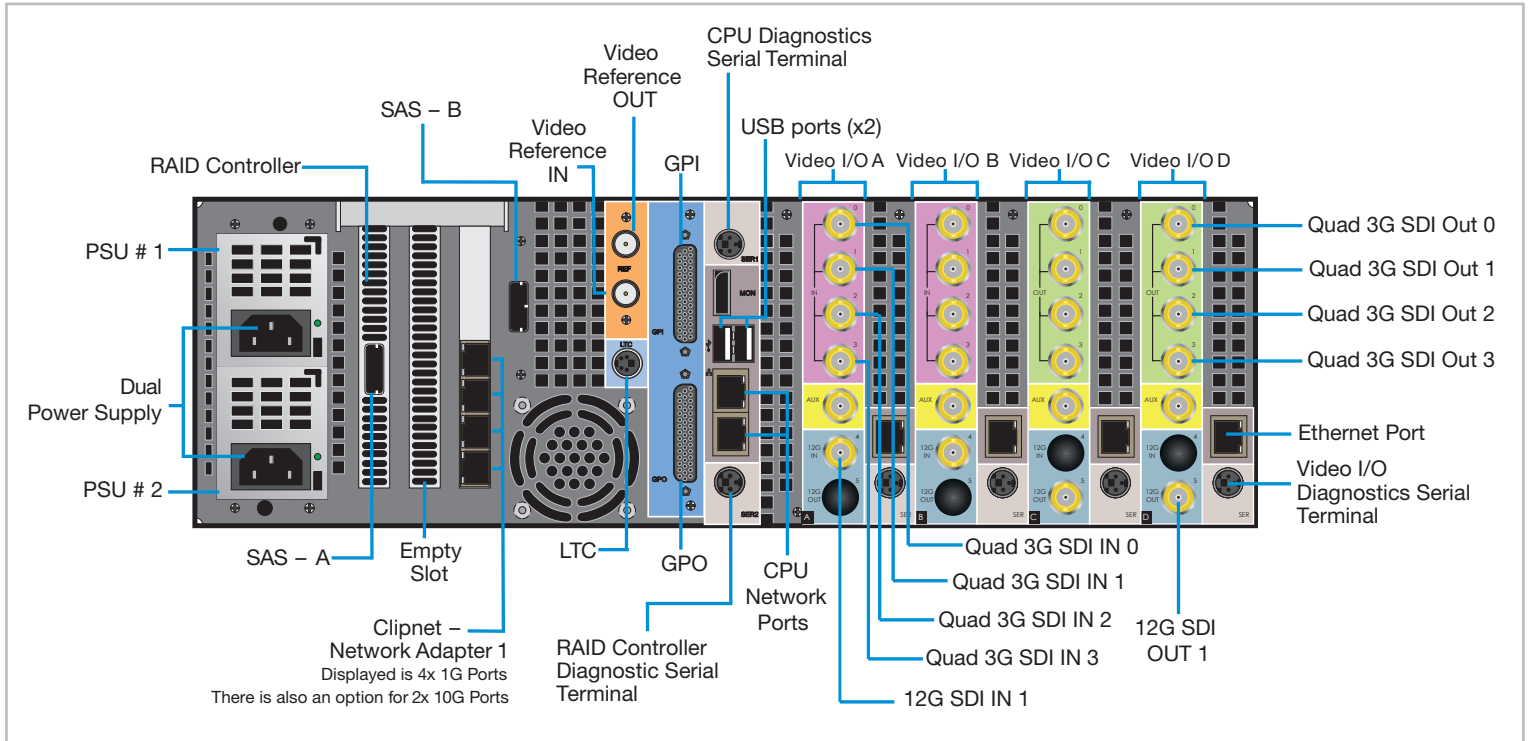
FGASQ 643002

Resilient FileFlow Manager – turnkey (3x PCs)

FGASQ 643003

Resilient FileFlow Manager – software only

sQ SDI Configuration



Input/Output 3G & 12G Options

