STREAMING GLOBAL

FREQUENTLY ASKED QUESTIONS

While the questions in this FAQ should look familiar to anyone operating a commercial streaming pipeline, some of the implementation answers are innovations that depart from the conventional solution used during the past 25 years.

These answers reflect Streaming Global's continued vision: **To improve streaming media quality, performance, and cost without tradeoffs, nor changes to existing workflow and infrastructure.**

What is the biggest driver of cost savings?

The biggest driver is stream density, the number of streaming viewers that can be serviced per physical server. When using SG MDRN packaging mode, Streaming Global's Agile Pipeline can deliver an almost 10x increase in stream density compared to conventional streaming software. Additional drivers include reducing ingest processing for live/linear content and the reduction of bandwidth usage for all live, linear, and vod content distribution.

How does SG prevent stream interruption and rebuffering for the viewer?

Streaming Global has a patent-pending method of eliminating rebuffer events without the need to buffer multiple fragments the way the HLS specification requires. That enables faster time-to-first-frame (TTFF) while eliminating rebuffer events, even in connectivity challenged areas.

What methods are used to improve streaming reliability?

Streaming Global has a patented method of delivering fragment metadata that requires less network traffic and less client-side processing than conventional manifest files. In addition, Streaming Global's patent-pending Media-Accelerated Storage Software eliminates network round-trips when fragments are requested prior to encoding/packaging being completed. This improves, avoids compounding network traffic when the first error occurs, and maintains minimal network bandwidth usage, even in connectivity challenged areas.

Does SG work with CDNs?

Streaming Global's patented Agile Pipeline and patent-pending Media-Accelerated Storage software work as an overlay technology installed as software components directly onto CDN's existing infrastructures to provide dynamic live/linear streaming that performs as rapidly and efficiently as static vod streaming.

How does SG support connectivity-challenged regions?

Every byte counts when delivering to connectivity challenged regions and low bandwidth connections. HTTP transactions use TCP/IP protocol which is ideal for confirming reliable delivery but multiplies network traffic when a connection hiccup or network error occurs due to servers sending error responses, clients re-sending requests to servers, or networks re-sending packets that are not acknowledged from the destination.

Streaming Global's MDRN protocol significantly reduces the number of bytes required to communicate metadata, from hundreds of kilobytes up to a megabyte for each manifest file update to simply a couple hundred bytes total for metadata about each newly available fragment container. SG MDRN also eliminates the need for HTTP round-trip transactions for metadata manifest files for both initializing and updates. This can result in up to ~97% less bandwidth required for metadata compared to a conventional live/linear/FAST stream over a 90 minute program. In addition, Streaming Global's media-accelerated storage software minimizes response errors and the related compounding network traffic generated by holding request connections open for upcoming fragment files. This combination of efficiency improvements has been commercially proven to deliver reliable and consistent live video streams over real-world 2G cellular infrastructure for months on end across the world's most challenging network topologies.

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How is SG billed? (Business models)

For commercial customers Streaming Global Technology licenses software components in a customer's existing infrastructure on a Software-as-a-Service (SaaS) usage model.

For commercial customers that do not yet have or do not want their own infrastructure, Streaming Global can recommend CDNs supporting Streaming Global's Agile Pipeline (preferred) – or provide SG hardware directly on an Infrastructure-as-a-Service (IaaS) usage model.

Contact us to learn about licensing options for Public Sector/Government customers.

Does Streaming Global provide infrastructure hosting as part of the end-to-end SG Agile Pipeline?

Streaming Global's Agile Pipeline is a collection of software components designed to be licensed into third-party infrastructures or used in conjunction with CDNs. Streaming Global does optionally provide an independent Infrastructure-as-a-Service (IaaS) on request.

Can SG be used for contribution streams or distribution streams in the workflow?

SG MDRN packaging mode has been used for contribution streaming to replace long-haul satellite because of its cost-effective and reliable delivery across the planet without requiring additional POPs along the way. That said, contribution streaming is not Streaming Global's market focus. The use of SG technology for very large scale streaming distribution provides far greater benefits to both the streaming service and viewing experience.

Is DRM supported?

Yes. Streaming Global supports all major DRM standards (Microsoft PlayReady, Google Widevine, and Apple FairPlay) through integration with EZDRM.

Is ad insertion supported?

Yes. Streaming Global supports ad-insertion signaling (SCTE-35 and SCTE-104 messages) in IP and OTA source feeds pass through.

Is closed-caption supported?

Yes. Streaming Global supports integrated and sidecar captions passed through SG HLS and SG MDRN packaging.

Is secondary audio channel supported?

Yes. Number of audio channels are configurable on a per stream/channel basis.

With what devices/players has SG integrated/tested?

Streaming Global has been tested on 30+ operating system and platform combinations to date. This includes all major platforms and devices running Windows, MacOS, iOS, iPadOS, Linux, Android, AndroidTV, Tizen, and WebOS.

Does SG support delivery to Roku?

Yes. SG HLS packaging mode enables a 100% Roku-compatible experience right out of the box utilizing Roku's existing player.

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Does SG support adaptive bitrate (ABR) distribution?

Yes. Streaming Global's SG-HLS and SG-MDRN packaging modes both support Adaptive Bitrate streaming. SG-HLS relies on the player's built-in switching functionality. SG-MDRN adds more advanced quality tier features that include both switching for bitrate (compared to available bandwidth) as well as decode resolution (processing power) limitations on a per device basis to ensure the best viewing experience across a broad range of devices and screen types.

What is the difference between SG HLS and SG MDRN?

Streaming Global supports two different ways to deliver the fragment and ABR metadata to the viewing client. SG HLS is 100% compatible with Apple's HTTP Live Streaming (HLS) protocol introduced in 2009 but uses highly efficient versions of HLS manifest files to deliver metadata about each fragment. SG MDRN, as the name implies, is a more modern metadata delivery method designed for efficiency, scalability, and reliability. Unlike SG HLS which uses HTTP transactions to deliver each master playlist file and regularly updated segment playlist files, SG MDRN uses realtime messaging to deliver a few hundred bytes (not a typo) of metadata per fragment. As a comparison, over a 90-minute live/linear program, SG MDRN delivers roughly 96% less metadata bits over the network.

Does SG provide low and ultra-low latency stream performance?

Yes. For low-latency (less than 4-6 seconds of delay) Streaming Global recommends SG HLS packaging mode which is about twice as fast as Apple Low-Latency HLS protocol. For ultra- low-latency (around 1 second or less) Streaming Global recommends SG MDRN which averages sub-second delivery times measured from encoder output to viewing display. SG MDRN can be tweaked to deliver a reliable stream in less than a half second for those applications that require shorter delay while still supporting reliable distribution at scale.

How is SG different from WebRTC?

Streaming Global technology was designed for reliable distribution of live, linear, and vod content to streaming consumers at scale – without missing a frame of entertainment or buffering delays. WebRTC is an open-source peer-to-peer project designed to move live video from webcams to a small number of people participating in an Internet video conference, like a Zoom or FaceTime call. The peer-to-peer nature of WebRTC makes good sense for a small audience like a video conference but becomes problematic, costly, and resource-intensive for audiences at scale. Other than both delivering video, SG and WebRTC are designed to solve completely different problems.

Does SG synchronize data and media?

Streaming Global has a patent pending method to embed custom data types into the standard media container with a shared clock timestamp in a way that the data can be accessed or visualized during the same media frame matching the time the data was captured/ingested.

Can Streaming Global convert a VOD library to Streaming Global fragments for optimization?

Yes. In fact, when using SG MDRN packaging mode only a small amount of metadata is required at the beginning to launch and play an entire VOD streaming title.

Does SG provide Network DVR (nDVR) functionality?

Streaming Global has a patent-pending method of switching from live to on-demand fragment download and playback that enables network-DVR functionality from the same fragments. This also enables live events to be immediately available as on-demand content without the need to process the fragments at the end of the event.

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TECHNOLOGY SPECIFICS

Is SG a streaming protocol?

Yes and No. Streaming Global technology is a collection of software components that modernize the old conventional streaming pipeline for what the Internet has become today. Those components directly support industry standard HLS protocol out of the box, and simultaneously offer a faster, less-expensive, more reliable, more scalable, additional protocol called SG MDRN.

Is SG a player?

No. Streaming Global believes the industry has plenty of players. SG supports billions of devices with standard HLS players when using SG HLS packaging mode. For SG MDRN packaging mode SG offers a player plug-in for many industry standard HTML5 and native players (such as Video.js, TheoPlayer, and Bitmovin) that cover all screen types, which improves and adds advanced playback features to those standard players.

Is SG a media container?

No. Streaming Global directly supports the industry standard ISO-BMFF/MP4 container both in whole-MP4 (identified with a MOOV box/atom) and fragmented-MP4 (identified with a MOOF box/atom) versions.

Is SG a CODEC or compression tech?

No. Streaming Global embraces industry standard compression/decompression types (CODECs).

What CODECs are supported?

Streaming Global supports all industry standard CODECs on request, switchable on a per stream/channel basis. Most SG customers are still using H.264 for video and AAC for audio due to the ubiquitous decompression support by almost every device and screen type. The more efficient HEVC/H.265 is gaining popularity as resolutions continue to increase.

Does SG use manifest files?

SG HLS packaging mode supports a highly-efficient HLS-compatible manifest (both master playlist for ABR and segment index playlist files) for metadata. SG MDRN packaging mode supports real-time messaging for much more efficient metadata on a per fragment basis.