inverto™

# Q-stream™

## A complete end-to-end content delivery solution

Q-Stream™ is a unique, DVB-NIP compatible, cloud service offering cost-effective live streaming and content delivery solution over broadcast satellite or terrestrial networks. a Q-Stream™ MABR/DVB-NIP cloud service featuring open-standard interfaces for easy integration with origin or CDN servers, DVB-MPE/GSE encapsulators and DVB-S2/S2X modulators at the broadcast headend side and Q-Stream™ gateway receivers and mobile player application for playout devices such as smartphone, smart TVs and Android TV STBs to be used by the end users.

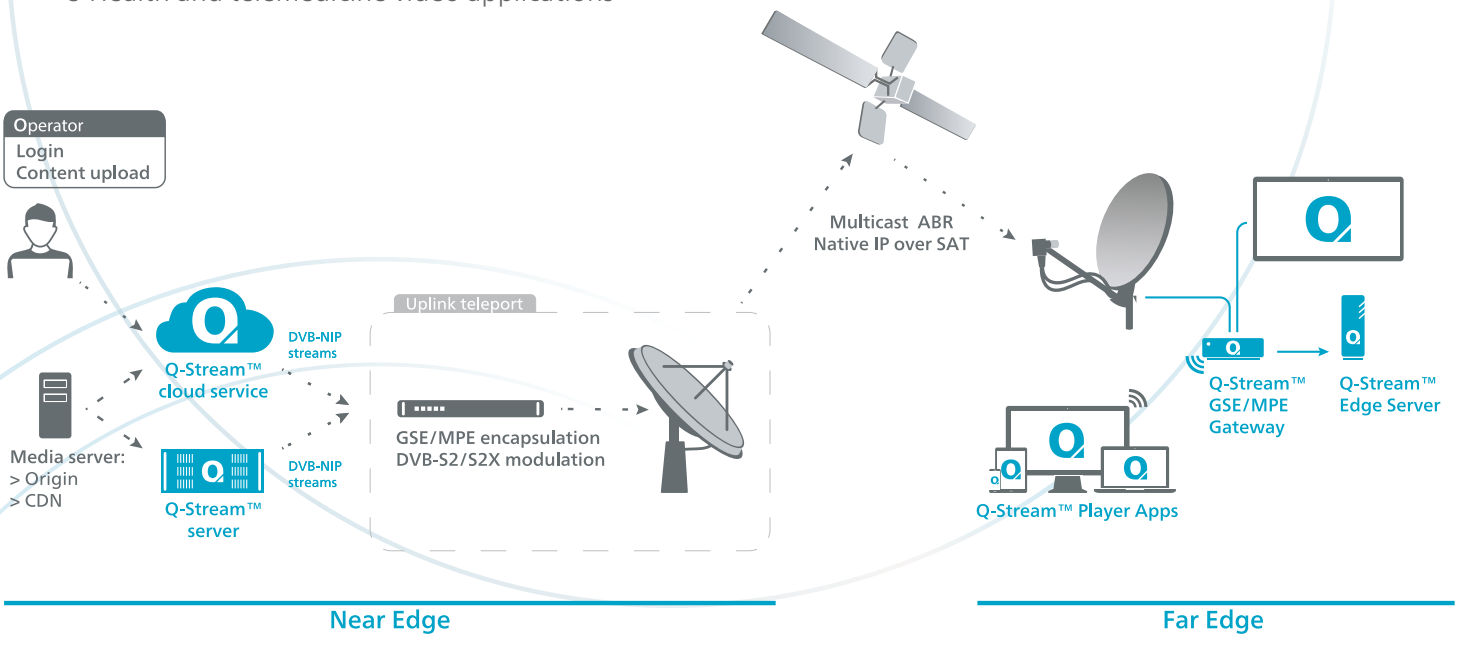
The content broadcast via Q-Stream™ – live/VoD MPEG-DASH/HLS streams or any type of files - is received by the Q-Stream™ gateways and is streamed to end user devices over Wi-Fi. The Q-Stream™ cloud service can also be provided as an on-premise installation if on-premise server if required.

The Q-Stream™ solution is addressing a plethora of use cases where content delivery over satellite is the only economically viable and ecologically sound option including e-learning for rural schools, maritime and connected vehicle entertainment applications, e-health to isolated communities, digital signage and smart city applications as well as multi-screen satellite TV services. In addition to serving rural communities, sea or air crews and passengers, Q-Stream™ can be used to reduce the cost of content delivery to CDN edges and 5G nodes, deliver low latency streaming and far better user experience to viewers.

DVB NIP®

**Applications:**

- Multi-screen OTT-over-Satellite/Terrestrial TV with targeted advertising
- Education services for rural schools
- Download-to-carry VOD/Magazines over WiFi hotspots
- Government services, entertainment and data delivery to rural communities
- Mobility content delivery at land, sea and air, including crew farewell
- Content delivery to CDN edges, 5G nodes, Cellular backhauling sites and 5G Private Networks
- Entertainment content delivery to public sites
- Digital signage
- Smart cities video services
- e-Health and telemedicine video applications




Scan the QR code for more information or contact Q-stream@inverto.tv to schedule a demo.

www.inverto.tv

# Q-stream™ Server

## IDLA-SERVO1-OLPRO-OPW
## Item 6039

Designed to address the growing need to converge IP video streaming and broadcast technologies in order to allow service providers to seamlessly deliver their service across multiple networks such as over-the-top, broadcast and IPTV, the Q-Stream™ mABR server is an on-premise content delivery server compatible with the DVB-NIP tech stack. It can receive HLS/DASH streams or files of any type over multiple interface protocols, encode them into FLUTE packets and generate a DVB-MPE transport stream or an IP stream ready for GSE/DVB-S2X broadcast.

Utilizing PCIe extension slots, the Q-Stream™ mABR server can, depending on the target application, integrate with a variety of modules such as receivers, video encoders and modulators, turning it into a powerful all-in-one platform converging traditional broadcast and the latest IP streaming technologies.

The Q-Stream™ mABR server embeds an intuitive web UI allowing users to ingest content from various sources, manage play out lists for broadcast and define the target group of gateways for each broadcast. Its high performance, cost-effective hardware combined with simplicity of operation, makes it an ideal solution for video service providers that want to profit from the convergence of IP and broadcast technologies, extend their service over multiple networks and screens to locations with limited or no Internet connectivity.

**Main features and benefits:**

- Economic DVB-NativeIP compatible mABR server solution
- Live and on-demand media streaming
- Secure, low latency streaming
- Multipurpose multi-format file transfer over broadcast satellites
- Intuitive content ingestion, receiver groups management and play out broadcast tools
- Redundant power supply
- Open and flexible interface to teleport uplink equipment
- Available as an on-premise installation or as a cloud service

*Product image is for illustration purpose, actual server may look different depending on availability.

## Minimum technical specifications

| | |
|---|---|
| **System** | |
| CPU | Intel® Xeon® processor E3-1585 v5 4-Core 8 Threads<br>Intel® C236 chipset<br>Intel® Iris Pro Graphics P580 (GT4e) |
| Memory and storage | 32 GB DDR4 2133MHz<br>256 GB SSD<br>1 TB HDD |
| Networking interface | Dual 10GBase-T LAN with Intel® X550 |
| Storage interface | 6 SATA3 (6Gbps) via C236; RAID 0, 1, 5, 10 |
| USB ports | 5 USB 3.0 (2 rear, 1 Type A, 2 internal) |
| Extension slots | 7x PCIe 3.0 extension slots |
| Broadcast interface | IP (OPTIONAL: DVB-ASI, DVB-S2X, DVB-T2) |
| Power supply | 2 built-in power supply units |
| | |
| **Input / Output streams** | |
| File formats | ABR files, Apple HLS, MPEG-DASH, CMAF<br>Generic files – documents, firmware, video, audio, data |
| IP Protocols | HTTP, HTTPS, Multicast, Unicast, RTP, RTSP, RTMP, FLUTE, DVB-mABR |
| DVB transport stream protocols | GSE HEM, DVB-MPE |
| Containers | MPEG TS, MP4, RAW RTP H.264/AAC/OPUS, FLV |
| | |
| **Security** | HTTPS, AES, DTLS-SRTP, SSL certificate management |
| | |
| **File system** | EXT3, EXT4, XFS |
| | |
| **System management** | SSH, web UI, REST API, System management port, IPMI, Watchdog |


# Qstream™ Gateway

## IDLA-GATW01-0L000-0PW
## Item 6358

Inverto's Q-Stream™ Gateway is a cost-effective DVB-NIP compatible satellite receiver designed to receive content distributed over broadcast satellites using Inverto's Q-Stream™ content distribution solution. The Q-Stream™ Gateway features a DVB-S2X front end and supports content delivery over GSE HEM or DVB-MPE transport streams.
It receives live ABR video streams or any other type of media files including VoD, documents and data files over multicast streams and publish the content over a built-in web server. The Q-Stream™ Gateway features a LAN port and a WLAN Access Point to stream the content to mobile devices directly or through a companion Q-Stream™ Edge server when a larger number of end users' mobile devices shall be supported at the same time.

In addition, the Q-Stream™ Gateway can decode the live mABR TV streams and display over a TV screen using its HDMI and analogue A/V ports. The Q-Stream™ Gateway features a USB2.0 port for connecting an optional local storage.

**Main features and benefits:**

- Access free-to-air satellite mABR TV streams
- Built-in dual band Wi-Fi software Access Point (Optional)
- Local storage over USB 2.0 port
- DVB-S2X, DVB-NIP compatibility
- Reception of mABR video streams, VOD and generic data files over GSE HEM or DVB-MPE transport stream
- Content distribution to connected devices over LAN/WLAN
- Scalable distribution to a large number of connected devices using a Q-Stream™ Edge server
- Available as SDK for integration into 3rd-party mobile apps and STBs

*Product image is for illustration purpose, actual Gateway may look different depending on availability.

## Technical specifications

| | |
|---|---|
| SoC | Montage Symphony4, 2-core Cortex-A7 (ARM) 32-bit SoC, up to 1.2GHz |
| Decoding | HEVC/H.264/H.263/MPEG-4/MPEG-2/AVS/AVS+/VC1/VP8/VP9 HD decoding |
| | HEVC Main Profile@Level 4.1 and Main 10 Profile @L4.1, High tier, VP8 2K@30fps, VP9 2K@60fps profile 0 and profile 2, MPEG2 MP@ML/HL |
| DDR | 512 MB DDR3 |
| USB | USB 2.0 (for software updates) |
| Wi-Fi (Optional) | 2.4 GHz and 5.0 GHz IEEE 802.1 b/g/n/ac wireless LAN.<br>Up to 3 simultaneous connections over the built-in WLAN software access point<br>Optional scaling and extended coverage over an external Inverto OneNet PROx MESH Wifi6 Router |
| LAN | 10/100 Mbps |
| Satellite input | 1x DVB-S/S2/S2X front end, female F-connector, 950-2150 MHz |
| Satellite Symbol Rate | 1-45 Ms |
| Satellite Input Level | -25 to -65 dBm |
| LNB control | 13/18V + 0/22kHz, DiSEqC1.x, Unicable/dCSS EN50494, EN50607 |
| Display | HDMI (analog A/V jack port optional) |
| Power | 12VDC, 1.5A max. |
| File formats | ABR files - Apple HLS, MPEG-DASH, CMAF<br>Generic files – documents, firmware, video, audio, data |
| IP Protocols | HTTP, HTTPS, Multicast, Unicast, RTP, RTSP, RTMP, FLUTE, DVB-HB |
| DVB Transport Stream protocols | GSE HEM, DVB-MPE |
| Containers | MPEG TS, MP4, RAW RTP H.264/AAC/OPUS, FLV |
| Optional design spin offs | 1x LTE modem with integrated SIM reader for internet connectivity (different PCB version) |
| | 1x DVB-T2 receiver for free-to-air digital TV (redesign required). |
| | Local storage management over USB (integration with 3rd party software may be required depending on customer requirements) |

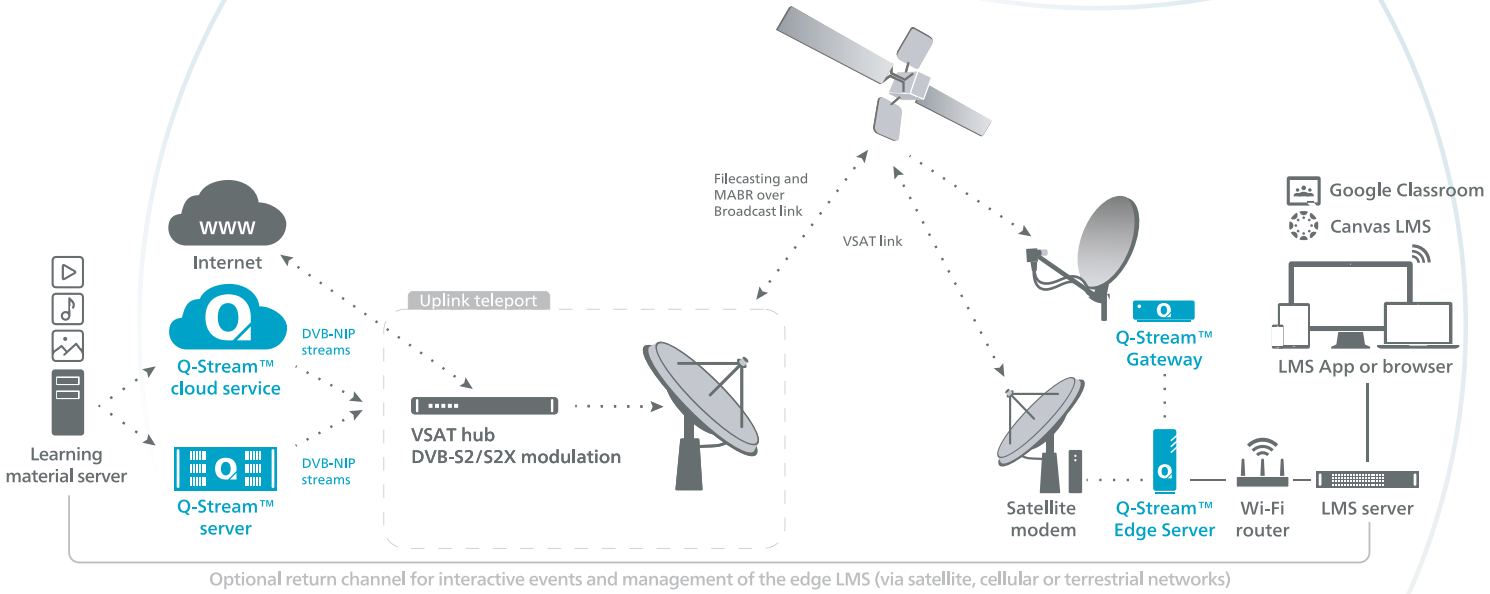
## Example use case - Education content delivery to rural schools

Making online education services available to rural schools and homes over satellite broadcast is of high importance to governments of developing countries that decided to close the digital divide.

A Q-Stream™ server (on-premise or as a cloud service) receives learning material files (including video, audio and documents) from a media server over the internet and broadcasts them over satellite to Q-Stream™ gateways installed in rural schools and homes. The gateways integrate the Q-Stream™ software stack that is responsible for extracting the educational material files from the broadcast streams, sharing them with a local LMS server making them available for local streaming to mobile devices over Wi-Fi. When many users shall be supported, a companion and more powerful Q-Stream™ Edge server is installed in addition to the gateway device.

Displaying content on a big TV screen is possible using a common android TV STB running the Q-Stream™ android app or an LMS android TV app if available. For some use cases, the Q-Stream™ Gateway is also able to store, decode and display learning material on a TV screen using HDMI or analog A/V RCA cable.

The following diagram describes the system architecture for the use case:



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