

# MultiPipe Technology

For: Telecom Operators, Media & Entertainment, TV Service Providers

- ⇒ In Sport, Every Second Matters
- ⇒ Award-Winning, Qarva Proprietary Protocol
- ⇒ Smooth, Comfortable and Ultra Low Latency Streaming

Qarva MultiPipe OTT protocol is award winning proprietary protocol delivered by Qarva for the best streaming experience. The technology, at the same time, is addressing two main issues of the internet television – Latency from live streaming and dependence of the bitrate on subscriber’s geographic location. Qarva MultiPipe is TCP/IP based protocol, which uses persistent connections to multiple streaming servers around the world, that were allocated to shorten distance between subscriber and server due to HLS protocol limitations, to receive and aggregate content data.

Up to 32 servers can be accessed the same time generating high content delivery speed and allowing usage of whole bandwidth of local internet connection for accessing video even from another continent and getting HD or even 4K & 8K quality.

Qarva MultiPipe could be integrated as proxy agent for older platforms or using provided libraries for most performance. In case of using MultiPipe proxy agent on end user device, aggregated video stream will be outputted to the device’s legacy player as HTTP video stream or HLS video stream.

**Qarva MultiPipe won “The Best Content Delivery Innovation Award” at TV Connect Award ceremony held in London on March 29, 2017.**

**“It’s a big honor for Qarva to be chosen as the winner of The Best Content Delivery Innovation by the most competent judges,” mentioned George Mikeladze, Founder and CEO at Qarva. “Qarva was always focused on Internet TV as the future of TV. At first, MultiPipe has been demonstrated in 2012, during the exhibition in Cape Town. We have streamed HD channels there directly from Tbilisi, Georgia over 13,000km away with the help of MultiPipe. Since then, we stay motivated in creating the innovative solutions and add more and more unique features to our product portfolio.”**

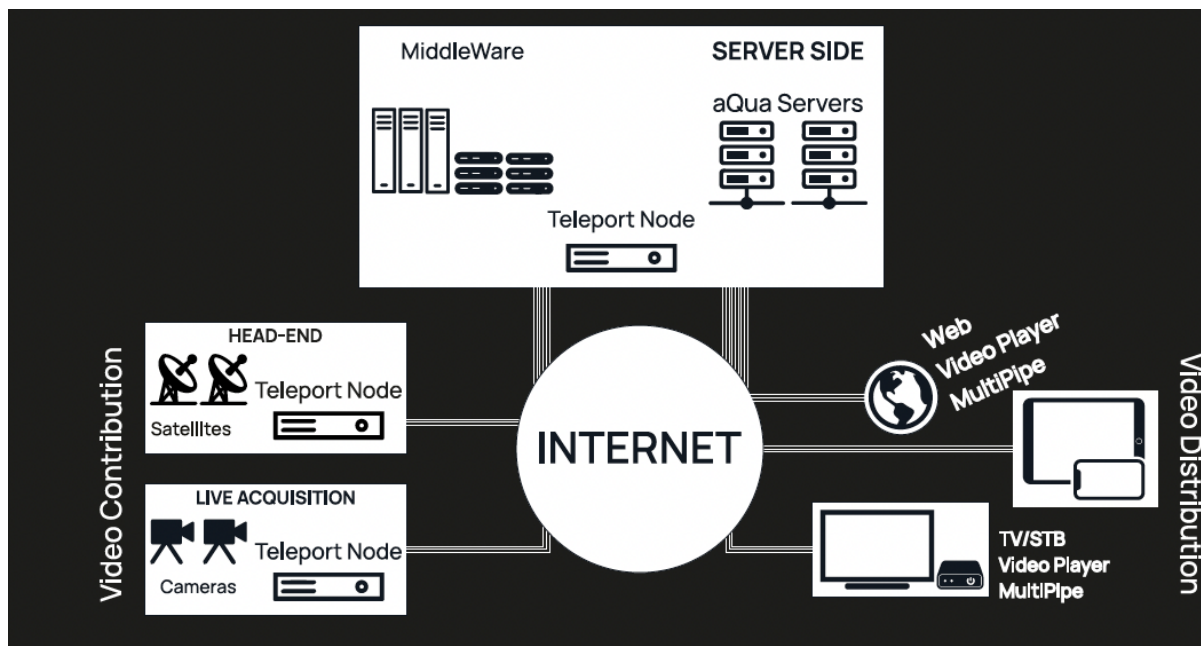
## **Key Benefits:**

- Ultra-Low Latency Streaming
- 4K/8K Live Videos Anywhere in the World
- Cost-Effective
- Breaking Geographical Barriers

Nowadays, clients can benefit from Qarva MultiPipe technology using following Qarva products and solutions:

- ⇒ OTT Streaming Solution
- ⇒ aQua Video Server
- ⇒ Qarva Teleport

## How Does It Work?



In recent years a big leap has been made in both video encoding quality and internet connection speeds. 4K video available from many sources and demands to such quality is increased among service providers and customers. Nowadays, connection speed between two points of the world usually is higher than the 4K video needs, but still, there are problems in delivery 4K video from point A to point B on long distances by internet. Problems include "packet losses", "latency" and "throughput bottlenecks". There are two common supported internet protocols UDP and TCP. UDP provides maximal throughput, but it lacks packet recovery and have problems of crossing NAT borders. TCP on the other hand is lossless and have no problems over NAT-ed connections, but by its design incorporates high latency and speed limits. Our approach is to break boundaries of latency and speed bottlenecks of TCP connection by using multiple TCP connections for data transfer.

### **Use Case:**

The real-life tests were performed to prove the advantage of Qarva MultiPipe over standard protocols. These tests showed that connection established between Europe and Hong Kong with 500ms RTT resulted in 20mbps stream in case of Qarva MultiPipe and only 2mpbs stream in case of standard protocol. In case Sidney (600ms) numbers were 20mbps and 1mbps respectively