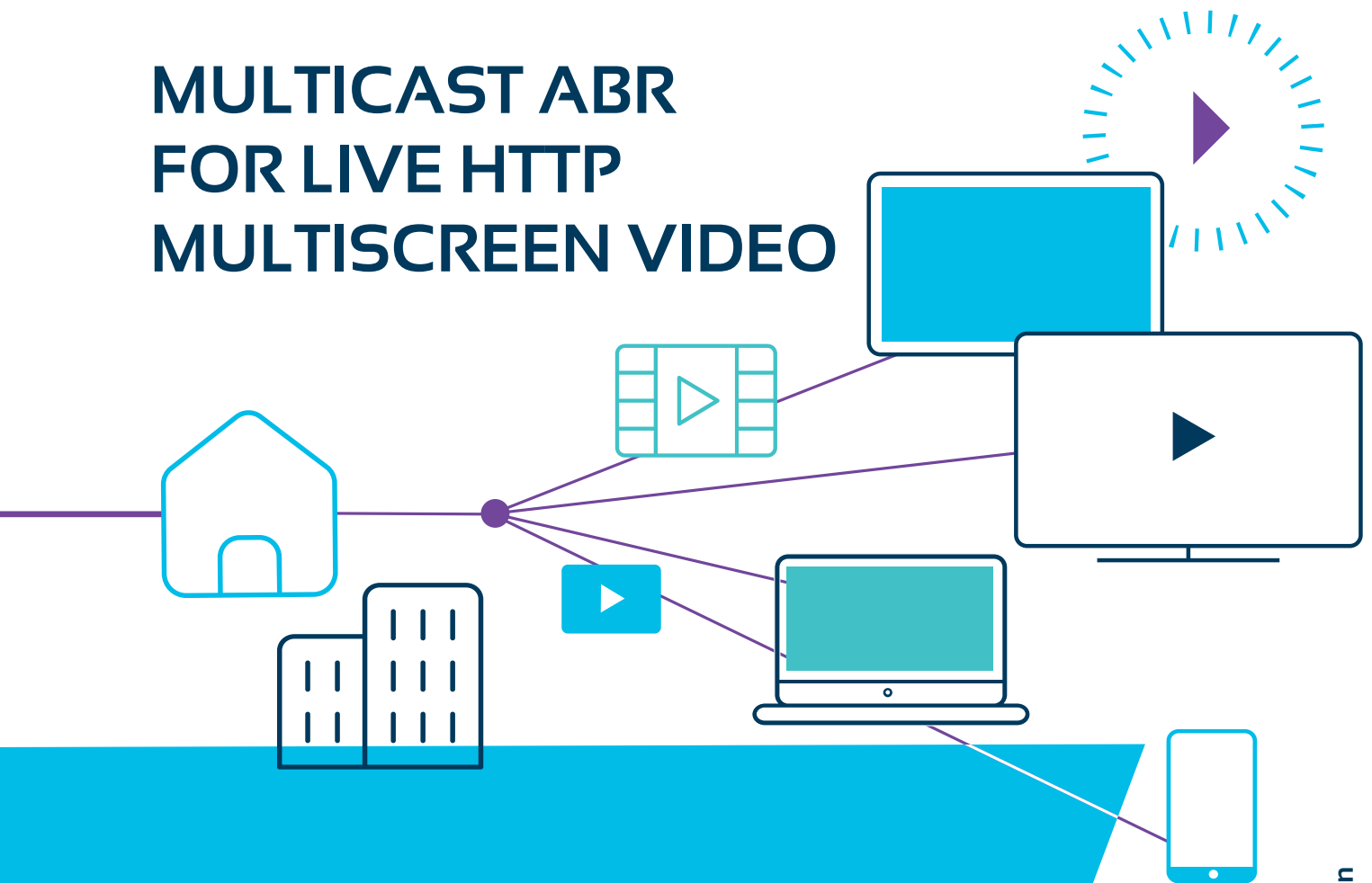




# MULTICAST ABR FOR LIVE HTTP MULTISCREEN VIDEO



**Bring scalability and low latency to live multiscreen video delivery with nanoCDN™ multicast ABR**

Adaptive bitrate (ABR) technology has enabled telecom and cable operators to make video content available to second screens (tablets, PCs, smartphones), but its delivery through public Internet in unicast has introduced scalability and latency drawbacks which makes it largely unsuitable for live content.

Broadpeak's nanoCDN™ offers to resolve these issues with its optimized multicast ABR implementation, a solution which combines the proven quality and efficiency of multicast distribution with the added value that ABR format brings in comparison to traditional MPEG-TS, making it a natural evolution of IPTV systems.

We Deliver the Future of Television



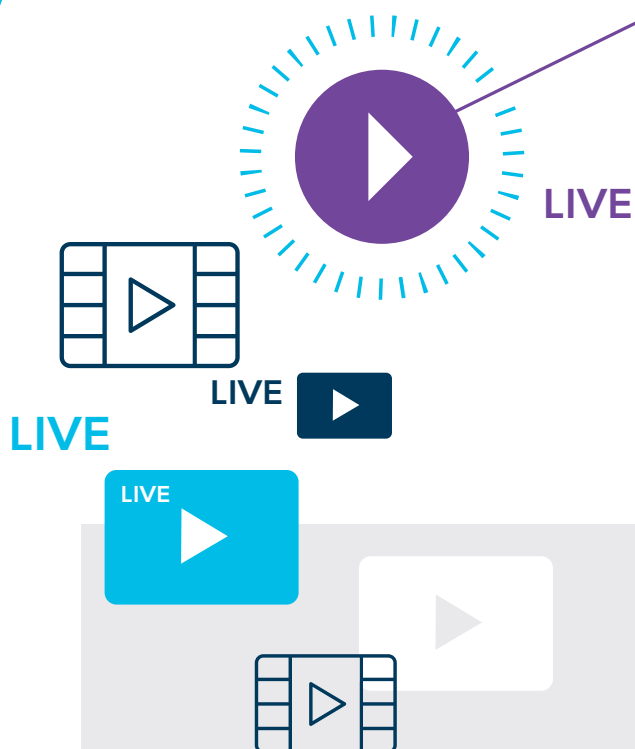
## Multiscreen video delivery

When millions of users simultaneously request to watch a live event – which is a common situation in sport events – the peak in video consumption can be too much for an operator to handle using a traditional unicast delivery method, where each viewer counts as a separate unicast session. The load, and hence scalability, issue is emphasized when 4K content is at stake.

In addition, the irregular and bursty aspects of HTTP unicast delivery require that players buffer tens of seconds of video to ensure a smooth playout without constant service interruption. This buffer is at the origin of the 30s and higher latency difference that exists between a multicast IPTV signal and a unicast OTT signal.

The principle of multicast ABR is to keep the original ABR streaming format (HLS, DASH) but distribute it embedded into a multicast stream, which by nature removes all of the hurdles related to peak hour consumption: whatever the number of viewers, the same amount of bandwidth is used over the operator's infrastructure.

Moreover, Broadpeak's nanoCDN™ creates the network conditions that allow players to reduce drastically the amount of video to buffer for ensuring a smooth playout. Combining multicast with optimizations such as CMAF chunking and HTTP chunked transfer encoding allows bringing the end-to-end latency down to traditional IPTV level.



## nanoCDN™ TECHNOLOGY PRINCIPLE

- The technology requires to deploy two main components:
  - A transcaster in the head-end after the encoder and the origin packager to encapsulate the unicast stream into multicast.
  - A nanoCDN™ agent in the home gateways or STBs to convert the multicast back into unicast.
- The nanoCDN™ agent is an optimized piece of software that requires less than 1MB for its installation. It can be made available on deployed home network equipment through standard firmware or configuration update processes.
- The nanoCDN™ agent is integrated with more than 80 models of home gateways and set-top boxes from major vendors including Android TV boxes and Apple TV. New models can be easily supported on demand.

## WHY USE nanoCDN™

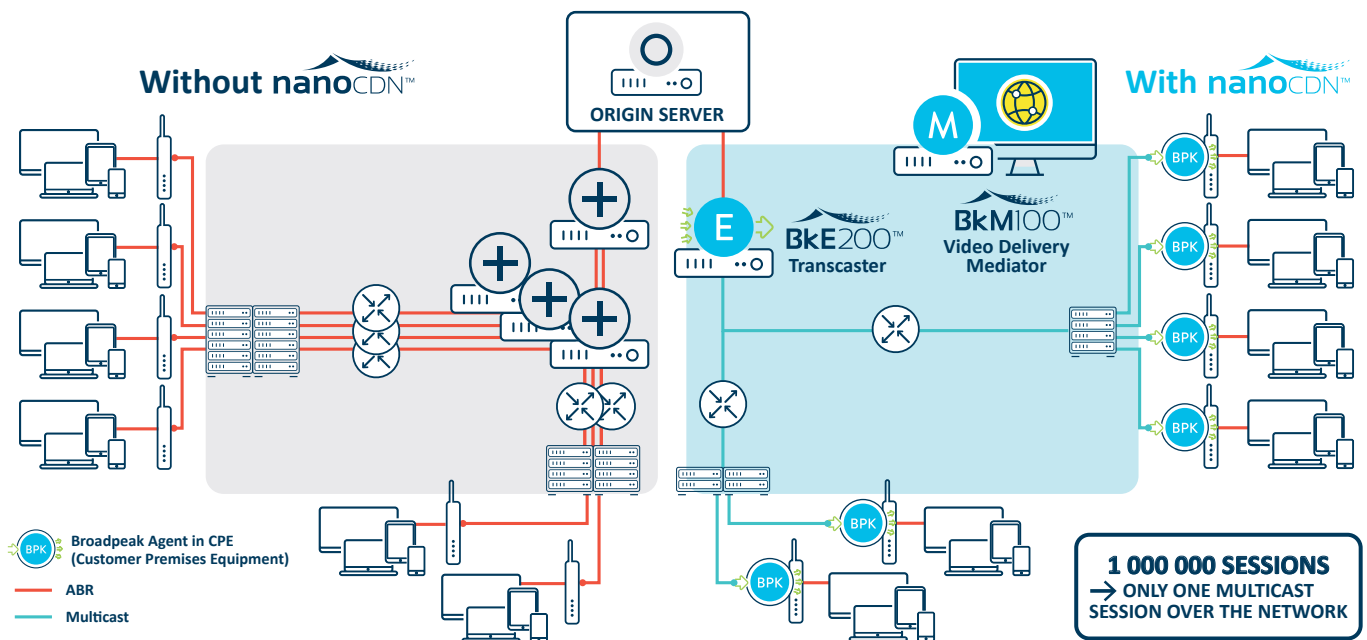
- Live ABR with multicast quality, no bitrate limitation and no extra latency.
- Unified ABR technology for the distribution system and receivers, no longer need for complex and costly mix of ABR and MPEG-TS.
- Get all the benefits of ABR also for Live on the main screen: personalized content, targeted ads, simple trick play etc.
- Unified controlled access with DRM, no longer need for a bespoke CAS.
- Enables live UHD in ABR format even on limited networks.

# BROADPEAK SOLUTION KEY BENEFITS

- Carrier-grade, designed to meet the requisites imposed by operation on the main TV screen and already proven by numerous commercial deployments.
- Optimized latency, relying on guaranteed multicast distribution and latest CMAF and HTTP chunked transfer encoding technologies.
- Compliance with HTTPS streaming to ensure secure end-to-end delivery.
- Fast-start and multicast repair mechanisms.
- Optional usage of file pre-caching, to distribute high popularity content such as VOD, catch-up, metadata, advertisement spots.
- Advanced analytics for monitoring, troubleshooting, optimization and business intelligence reports, possibility of automated provisioning based on real-time content.



# PRODUCTS AND ROLES



## nanoCDN™ COMPONENTS



### BkE200 Transcaster Server

Positioned in the head-end after the origin packager, the BkE200 transcaster encapsulates multilayer HTTP ABR format (HLS, HSS, MPEG-DASH) unicast content in multicast for optimized delivery.



### nanoCDN™ agent

Embedded in the home gateway or the set-top box, the nanoCDN™ agent joins the multicast ABR channel and converts the received stream back to unicast, enabling video delivery to any standard streaming device.



### BkM100 Video Delivery Mediator

The video delivery mediator allows the configuration of the system, the monitoring of the equipment and the allocation of multicast resources based on channel popularity.  
*(Optional)*



### SmartLib

This optional library can be used to optimize the nanoCDN™ workflow by handling auto-discovery of the nanoCDN™ agent.  
*(Optional)*



### BkA100 Video Delivery Analytics

The BkA100 Analytics platform provides information and analytics about the audience and consumption of the services