Multicast Adaptive Bit-Rate (MABR)

Solution, footprint, facts, hurdles and evolution

Presentation to IETF127, MBONED Group, November 17

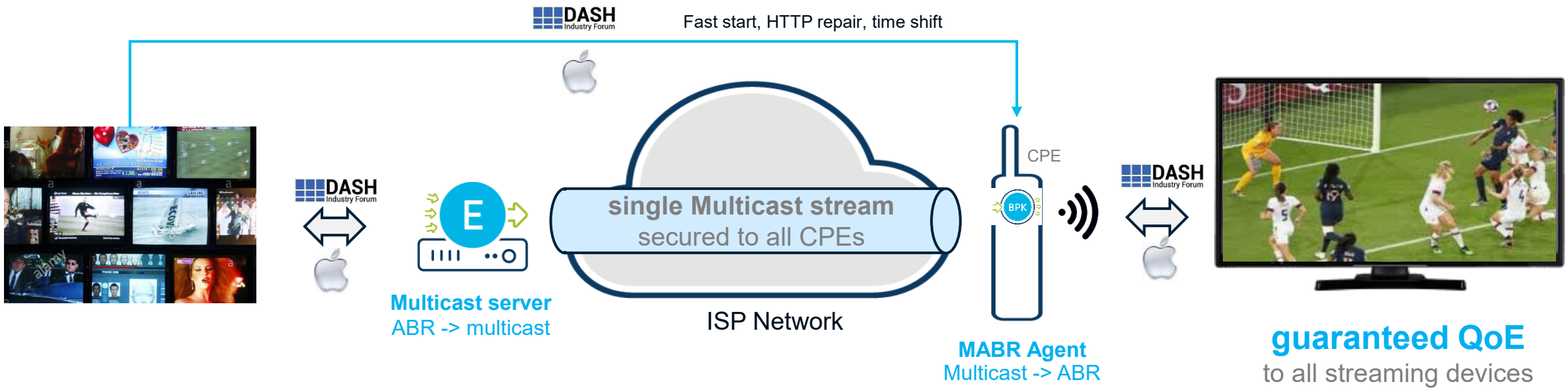


broadpeak

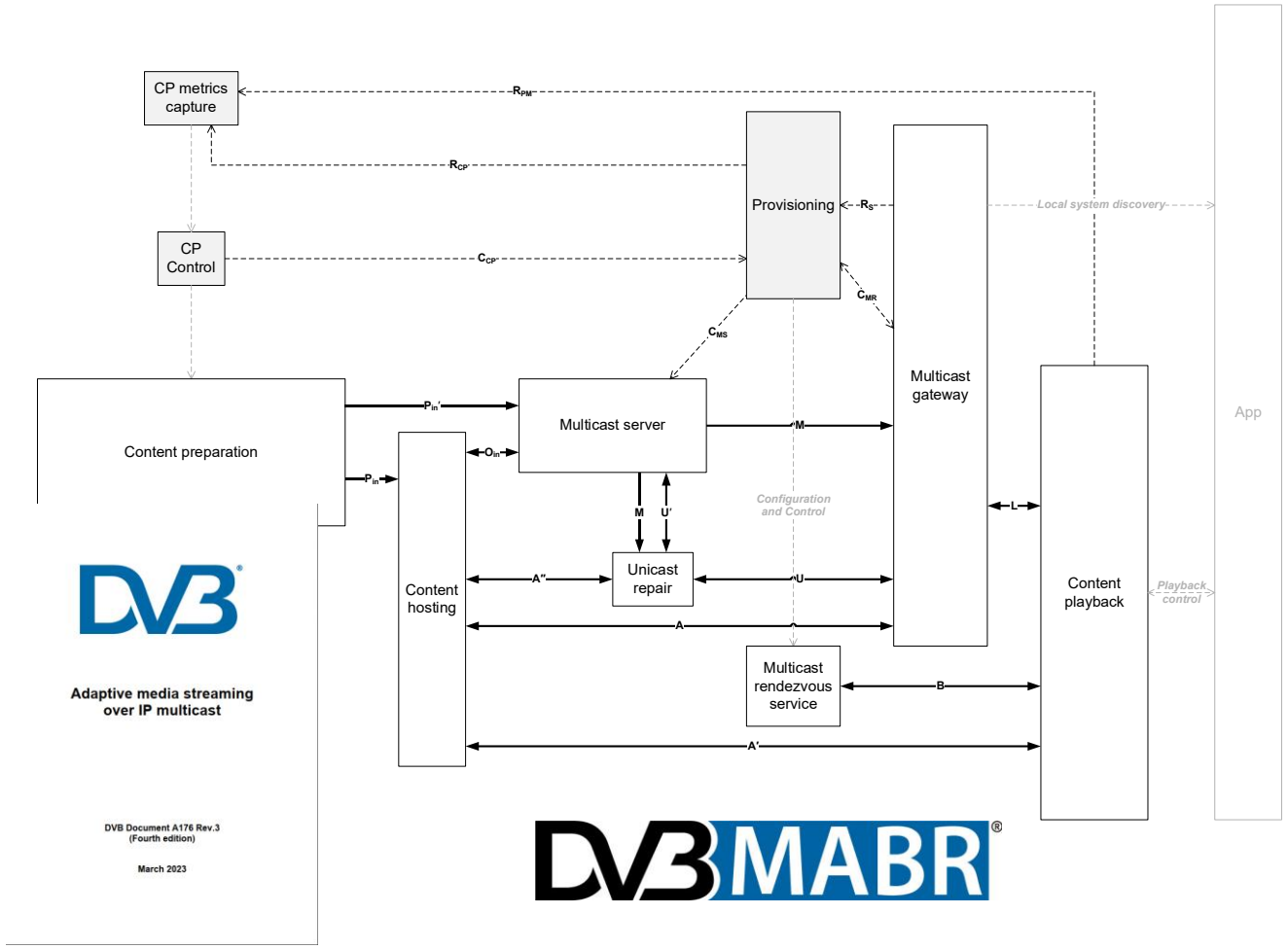
This is streaming at its peak

Guillaume Bichot

Multicast Adaptive Bit Rate



MABR Specification



DVB MABR®

SVTA Open Caching Initiative



Workgroup: Network Working Group
Published: 30 October 2026
Intended Status: Standards Track
Expires: 3 May 2027

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CDNI Delivery Metadata

Abstract

This specification adds to the core set of configuration metadata defined in RFC8006, providing delivery metadata to define traffic types, request delegation behavior and CDN transport arrangements selection for a downstream CDN.

IETF

Network Working Group
Request for Comments: 5740
Obsoletes: 3940
Category: Standards Track

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November 2009

NACK-Oriented Reliable Multicast (NORM) Transport Protocol

Abstract

describes the messages and procedures of the Negative-
t (NACK) Oriented Reliable Multicast (NORM) protocol.
can provide end-to-end reliable transport of bulk data
reams over generic IP multicast routing and forwarding
RM uses a selective, negative acknowledgment mechanism
reliability and offers additional protocol mechanisms

Internet Engineering Task Force (IETF)
Request for Comments: 6726
Obsoletes: 3926
Category: Standards Track
ISSN: 2070-1721

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FLUTE - File Delivery over Unidirectional Transport

Abstract

This document defines File Delivery over Unidirectional Transport (FLUTE), a protocol for the unidirectional delivery of files over the Internet, which is particularly suited to multicast networks. The specification builds on Asynchronous Layered Coding, the base protocol designed for massively scalable multicast distribution. This document obsoletes RFC 3926.

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Real-Time Transport Object Delivery over Unidirectio
(ROUTE)

Abstract

The Real-time Transport Object delivery over Unidirec
(ROUTE) protocol is specified for robust delivery of
Objects, including Application Objects with real-time
constraints, to receivers over a unidirectional transport.
Application Objects consist of data that has meaning to applications that use the ROUTE protocol for delivery of data to receivers; for example, it can be a file, a Dynamic Adaptive Streaming over HTTP (DASH) or HTTP Live Streaming (HLS) segment, a WAV audio clip, etc. The ROUTE protocol also supports low-latency streaming applications.

Internet-Draft
Intended Status: Informational
Expires: November 29, 2026

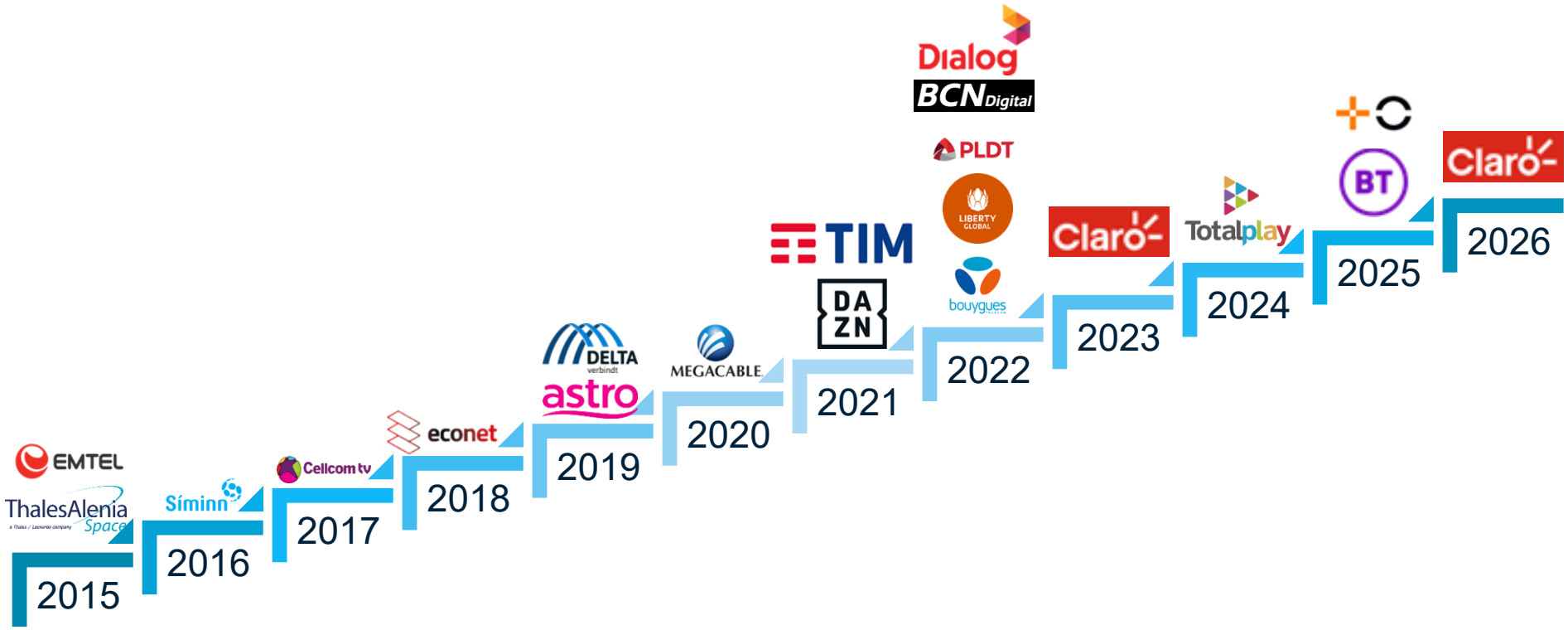
S. Bale
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May 28, 2026

MSYNC
draft-bichot-msync-20

Abstract

This document specifies the Multicast Synchronization (MSYNC) Protocol. MSYNC is intended to transfer video media objects over IP multicast. Although generic, MSYNC has been primarily designed for transporting HTTP adaptive streaming (HAS) objects including manifests/playlists and media segments (e.g., CMAF) according to a HAS protocol such as Apple HLS or MPEG DASH between a multicast sender and a multicast receiver.

MABR footprint



25 deployments worldwide for 25 Millions of viewers

MABR latency

Only <1s behind broadcast in production

- DASH CMAF-LL + MABR
- Used for Copa America and Euro 2024
- 2s segments
- STB Android v12



Legacy cable

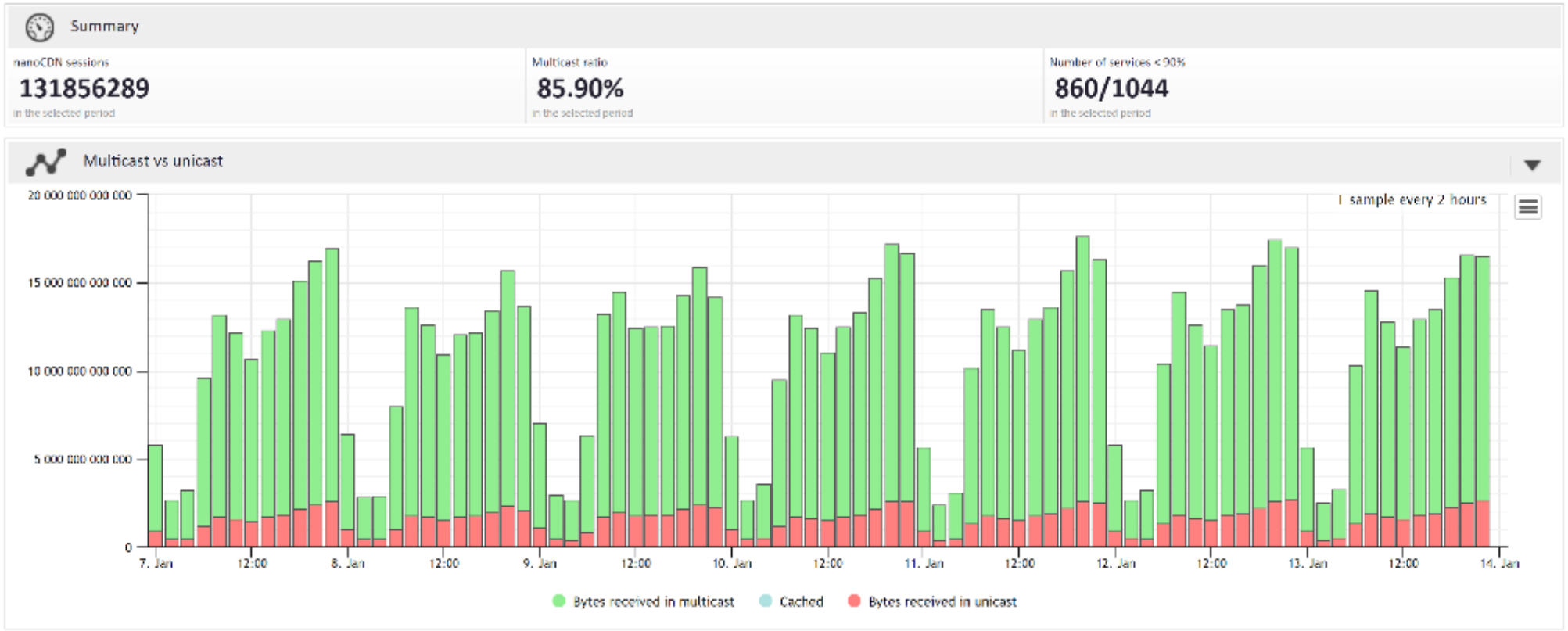
MABR + CMAF

MABR efficiency 1

27 million sessions over 48h
= 85% served from multicast
= 33 PB saved with multicast

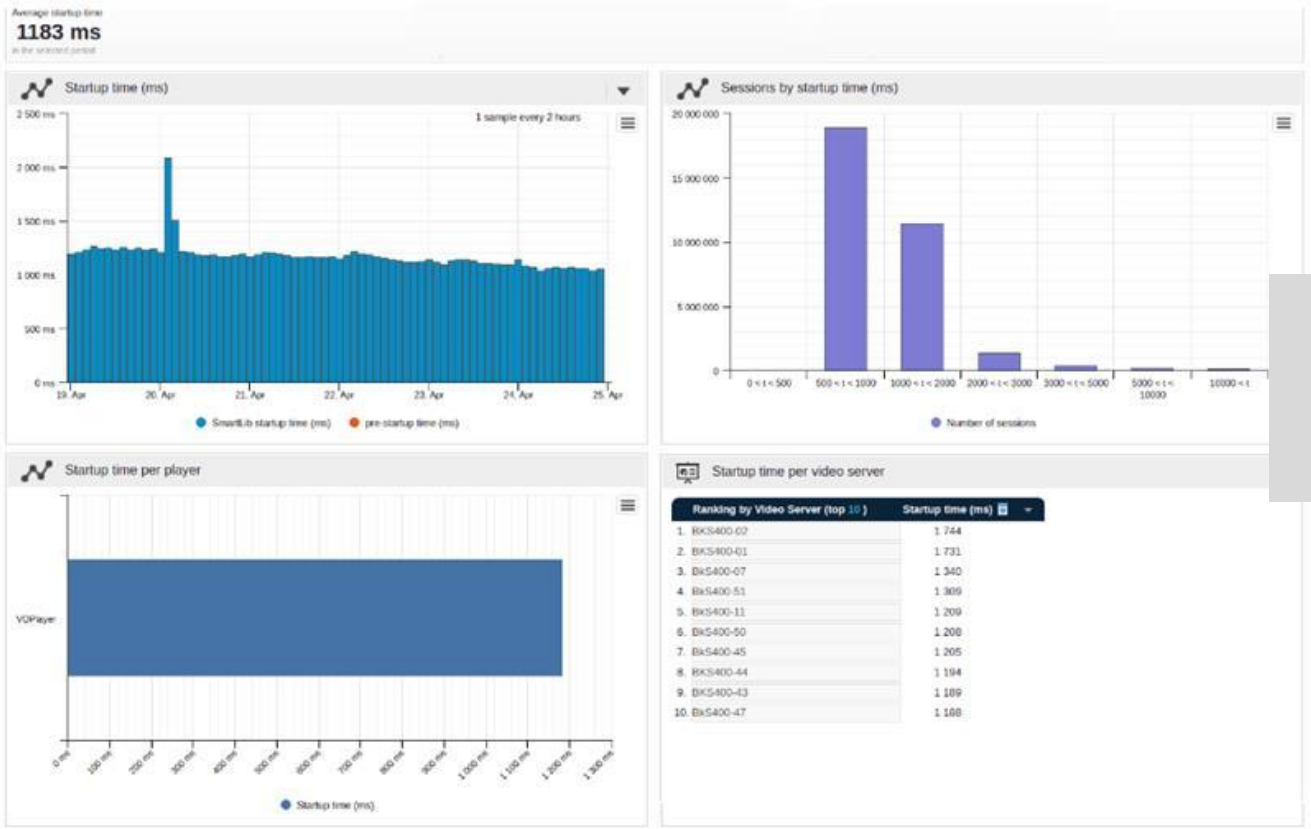


MABR efficiency 2



132 million sessions over 7 days = 86% served from multicast

MABR startup time



30M sessions

1.2s average

50% below 1s

MABR: FIFA 2026

One customer has delivered **339 Petabytes** of data during the world cup via the Unicast CDN and **1,628.73 Petabytes** to the customers premisses.

Date	Unicast Peak (Gbps)	Max CC sessions	Unicast PetaBytes
11-Jun	1,550.00	1,631,327	9.7
18-Jun	2,115.00	1,890,508	8.7
24-Jun	2,117.00	1,892,278	9.0
30-Jun	**2,074.93**	**2,012,827**	**9.9**
05-Jul	1,975.66	1,925,652	9.8

MABR FIFA 2026



“…By the last second of the game, when everybody zap (tune to another channel) at the same time. This creates a massive load on their F5s and on the CMS platform, that is hardly sustainable, causing failures for a few seconds after the game ends….”

MABR deployment challenges

MABR agent integration into CPE
Get CPE vendor to accept and guarantee it won't harm the device Integration to existing lifecycle management (logs, updates,..)

Adaptations to CMS URL formats specificities
Cope with CMS specific queries or parameters insertion in the URL (for regionalization, security tokens, device types, etc...)

Low-latency fine-tuning with Origin, player and CDN
Latency optimizations potentially impacts the whole delivery chain

Adaptations to Origin formats specificities
Cope with implementations variations, manifests in particular

Cover all workflow use cases and fine-tuning
Strategy definition for discovery, fallback in case of multicast failure, …

Maximize multicast usage
Multicast distribution troubleshooting, unicast use optimization

Open MABR



KPI Improvement over Unicast in Spain

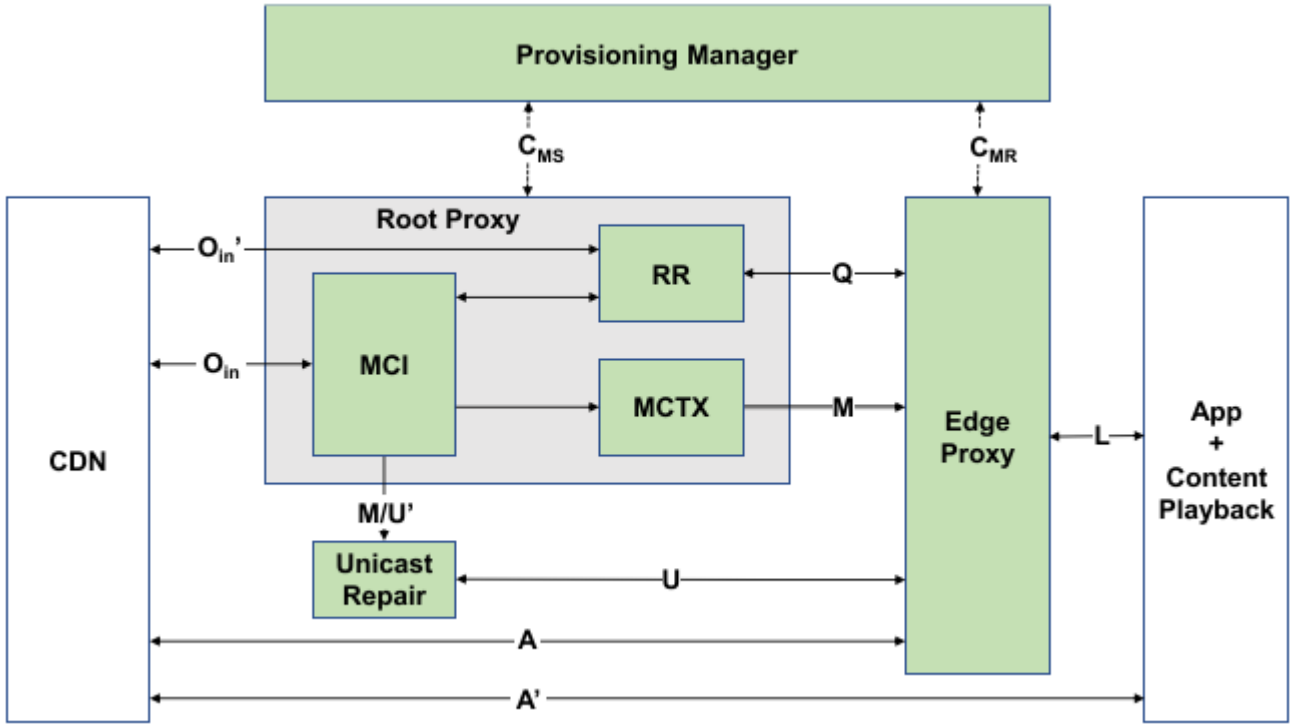
VSF-T	CIRR	VPF-T	Avg Peak Rate
Fewer Video Start Failures	Reduced Rebuffering Rates	Fewer Failures once started	mABR take up is always at the highest bit rates in ABR ladder
89 % improvement	**76 % improvement**	**86% improvement**	**11% improvement**

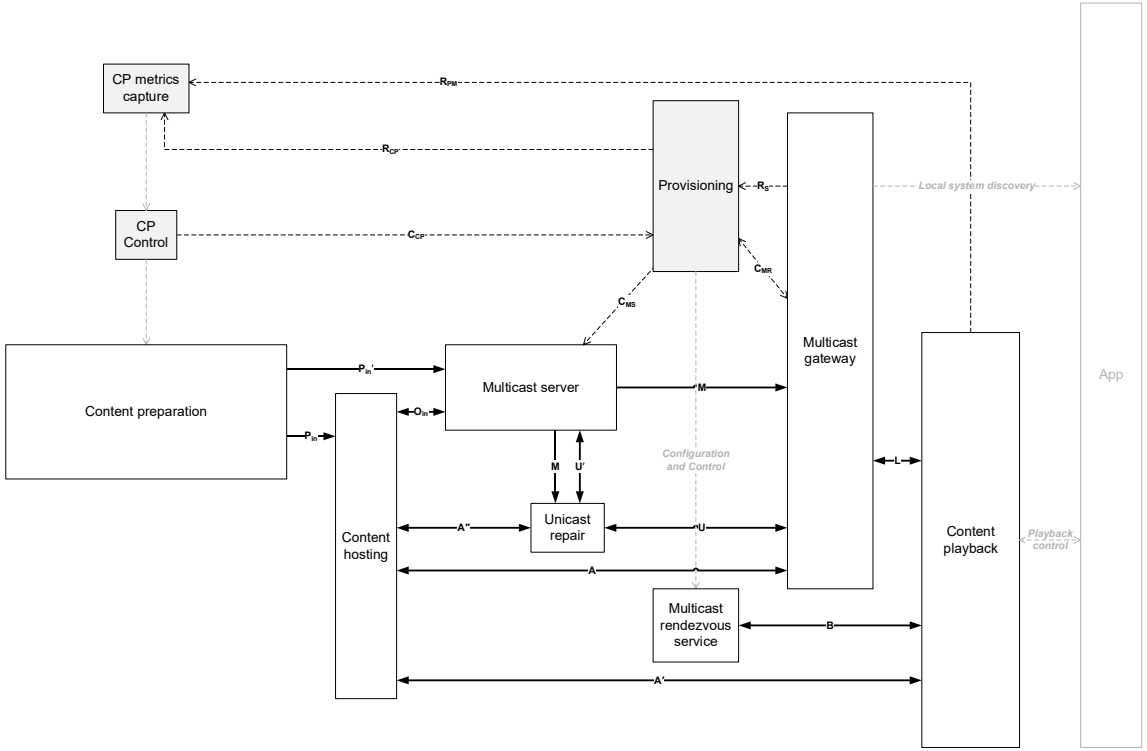
* Improvement figures based on Conviva performance1 Mar 23 to 27 June 2023

Coming: MAUD

March 12, 2024

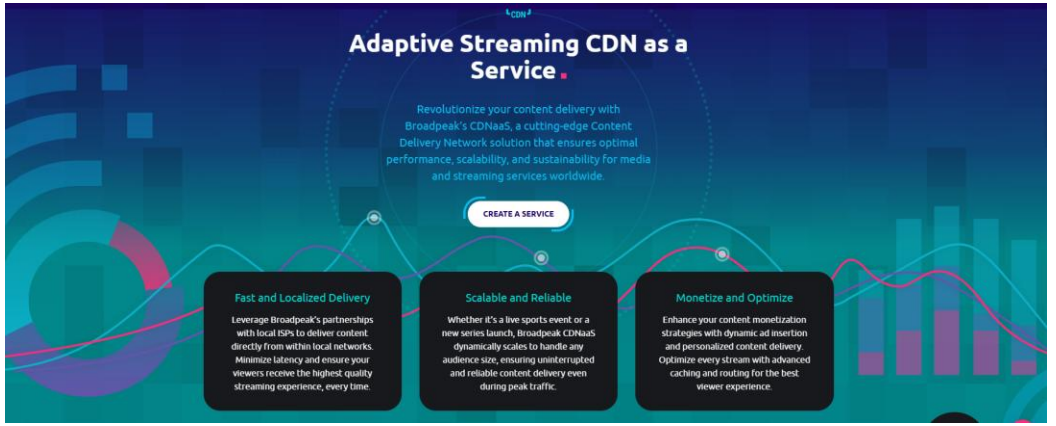
BT GROUP AND BROADPEAK PARTNER ON NEW MULTICAST TECHNOLOGY TO ENHANCE LIVE VIDEO STREAMING

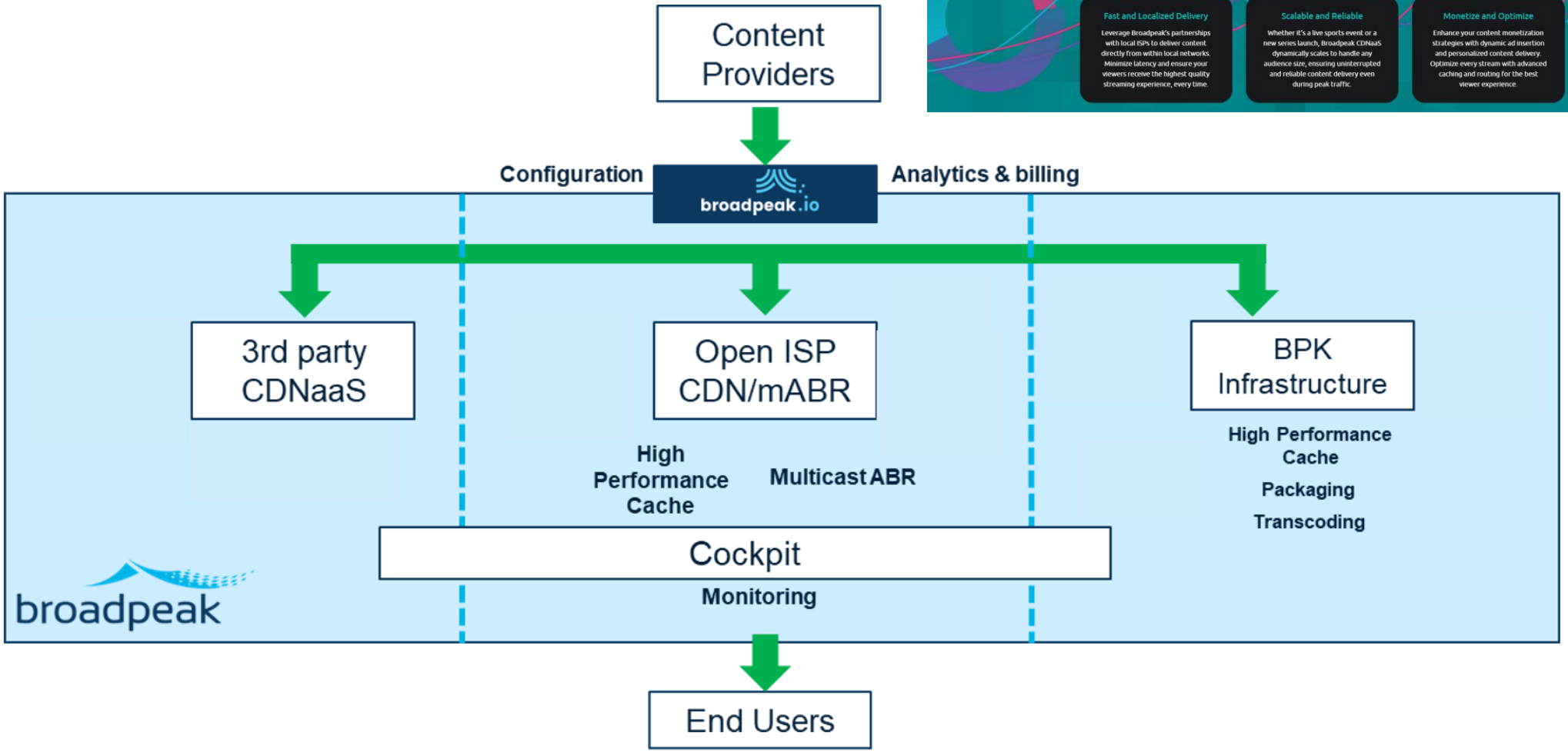




MAUD vs DVB-MABR

Coming: CDN As a Service

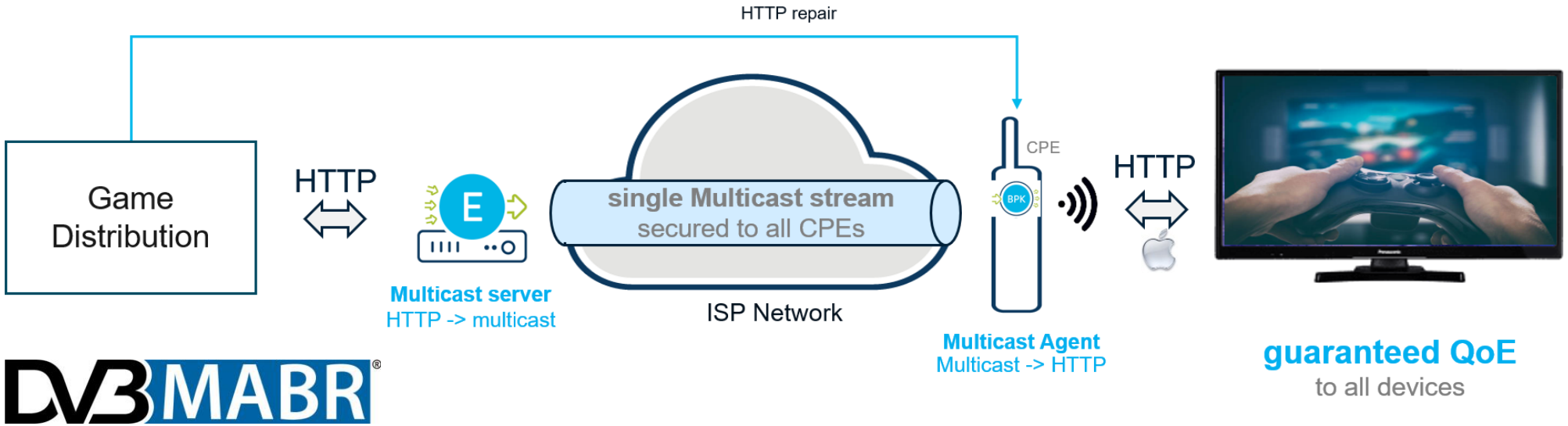




Coming: [BIG] File casting

Download speed 65Mbps		
Game	GB	Time
Call of Duty	133	>4 hours
Minecraft	84	~3 hours
WWE 2K22	47	>1 hour
FIFA 22	30	~1 hour
Fortnite	18	36 mins
Evil Dead: The Game	5	10 mins





DVB MABR®

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