BITMOVIN | ZIXI WEBINAR

24/7 IP Contribution and Cloud Transcoding

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Moderator & Panelists

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BITMOVIN + ZIXI

Agenda

- **Introduction**
  - Bitmovin and Zixi
- **Architecture**
- **Example Zixi + Bitmovin workflow**
- **Case Study**
- **Myths**
- **Takeaways**
- **Q&A**

Who is Bitmovin?

Bitmovin's Backstory

Summary

- Company founded in 2013
- Co-created the MPEG DASH standard
- YCombinator 2015
- 31+ US Patents
- Athena Research Project

Chris Müller

CTO & Co-Founder

Stefan Lederer

CEO & Co-Founder

Some of our customers include:

fubo^TV   B B C   classpass   iflix

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Value Drivers: Zixi & Bitmovin better together

1

Better Viewer Experience

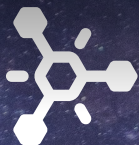Increase viewer satisfaction by exceeding expectations on video quality

2

Faster Time to Market

Get assets, products and, services to market faster and more efficiently

3

Operational Optimization

Control cost, mitigate risk and better manage complexity, maintain relevance

ENCODER

Deliver content in the highest quality at the lowest streaming costs. Prepare content at high speed and deploy on any environment.

PLAYER

Reach viewers on largest number of devices using a multi-device player. It's flexible and easy to deploy, utilizing built-in SVOD and AVOD features, giving complete control of the viewing experience.

ANALYTICS

Fix playback issues with real-time data before your viewers see it. Monitor infrastructure performance insights, anytime, all the time. Visualize data, your way.

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classpass

The New York Times

BBC

RTL

OSN

iflix™

DStv

Telekom Slovenije

ZNIPE.TV

antel

fuboTV

Who is Zixi?

What We Do

Software-Defined Video Platform that enables broadcast-quality video transport over any IP network, protocol, cloud provider & edge device.

- Employed by traditional broadcasters, OTT broadcast services, service providers
- To source, manage, and distribute live events and 24/7 live linear channels over IP
- Through the tight integration of four crucial elements:
  - ZEN Master
  - Zixi Video Solutions Stack
  - Zixi Protocol
  - Zixi Enabled Network

SERVICE PROVIDERS

CONTENT OWNERS

MULTI-CLOUD

OTT PLATFORMS

ZIXI-POWERED DEVICES

ANY
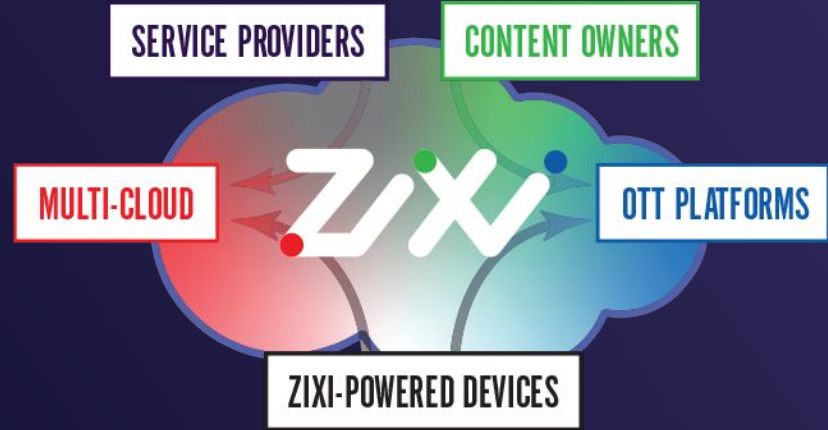
IP NETWORK
PROTOCOL
CLOUD PROVIDER
& EDGE DEVICE

Enabling the Largest Global Ecosystem for Live Video

Zixi provides a scalable platform to easily, quickly and cost effectively interconnect the world's leading media companies, their cloud and service providers, and thousands of edge devices around the world.

Bringing 10+ Disparate Hardware & Software Solutions All Under 1 Platform
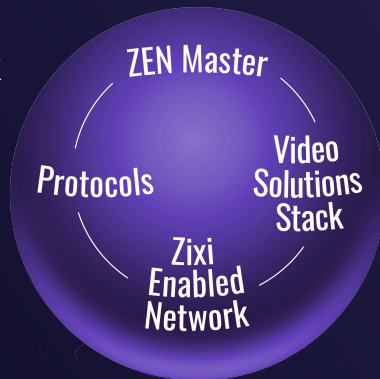
ZiXi
SOFTWARE-DEFINED
VIDEO PLATFORM

Protocols

- Zixi Protocol - Best protocol in the market, including unique features like: DTLS, dynamic FEC, protected multicast, encoder back pressure, any IP bonding, business impact analytics, 30%+bandwidth efficiency
- 15 integrated protocols: Zixi, RIST, RTP, RTP+FEC, UDP, HLS, CMAF HLS, Low Latency HLS, DASH, RTMP, SRT, Multipath TCP, TCP BBR, RTSP, HTTP
- Protocol switching

Video Solutions Stack

- Hitless failover
- 99.999%+ reliability
- Supported Codecs: MPEG-2, H.264/AVC, H.265/HEVC, JPEG 2000
- Any IP network type
- Any protocol
- Any cloud - public or private
- Transcoding & repackaging
- ML based ePSNR
- Recording
- Time shifted delivery
- Auto-slating
- Network analytics
- Transport analytics
- Content quality analytics

ZEN Master

Protocols

Video Solutions Stack

Zixi Enabled Network

ZEN Master

- Provisioning
- Deployment
- Orchestration
- Monitoring
- Multi-party supply chain
- Telemetry visualization
- Workflow visualization
- Alerting
- History
- Automation
- Scheduling
- Reporting
- Root cause analysis

Zixi Enabled Network

- Any edge device
- Interoperability
- Cross supply chain
- 170+ tech partners
- 700+ customers
- 100+ countries
- 80,000+ Zixi instances

BITMOVIN + ZiXi

5 Major Use Cases and Growing

	Satellite Rationalization	Cost-Effective Content Exchange	Centralized Management & Monitoring	Enable New Revenue Sources	Cloud/Virtualization Infrastructure
Business Drivers	Customers are moving from satellite because they want flexible cost rather than high fixed cost	Facilitating cost effective content exchange for both content owners and content acquirers	ZEN Master provides a single centralized virtual Control Plane to efficiently monitor and manage content over any and all IP	Drive to monetize more content and content formats across new platforms	Move from hardware based to software defined in order to gain workflow flexibility and speed/agility
Customer Examples	SES your satellite company, UNIVISION, NBC UNIVERSAL	sling, fubo TV, prime video, hulu	verizon✓, Disney streaming services, FOX	Bloomberg, NBC UNIVERSAL, IMAX	BITMOVIN, Microsoft Azure, aws, Google Cloud, Bloomberg

Zixi + Bitmovin integration

ZF

ZB

ZF

Encoding Worker

The video file is split into chunks to maintain encoder performance

Storage / CDN

Video Player
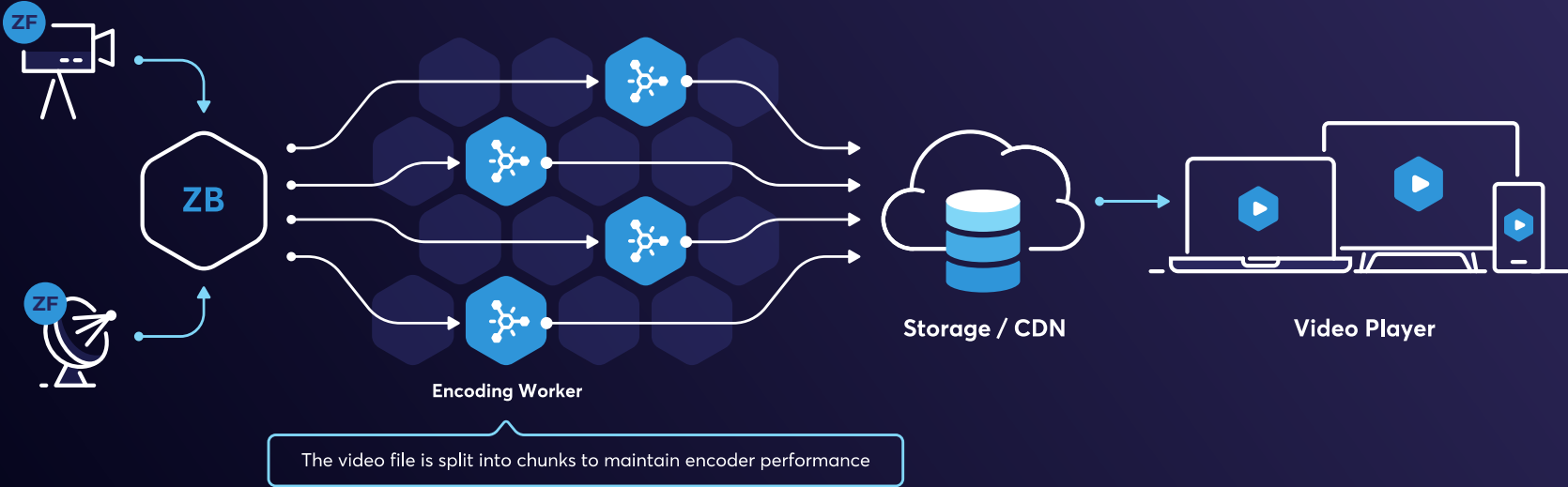
Architecture for Live Contribution over IP

Traditional Approaches

- **RTMP**
  - Susceptible to packet loss
  - Requires geographically close ingest servers
  - Only one video stream and two audio channels
- **HLS/DASH**
  - Latency
  - Instability - timeouts, throughput fluctuations

Modern Approach with Zixi

- Distance agnostic
- Addresses packet loss and jitter with congestion aware
  ARQ & FEC technology
- Bonding and hitless failover to make use of multiple network paths
- Use any IP - public internet, low orbit satellite IP, 5G/4G, fiber, etc
- Multi-program Transport Stream (MPTS), >two audio channels, SCTE-35
- Secure with both AES and DTLS encrytion

Typical IP Contribution Scenarios

Live Events - On Premise

- Zixi enabled baseband encoder
- Zixi enabled video camera
- Zixi mobile app and app SDK
- Baseband encoder / switcher side-by-side with Zixi Feeder
- AWS MediaConnect
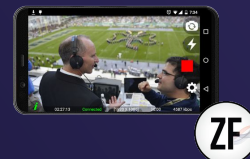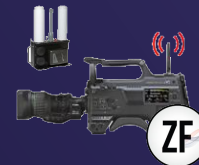
Linear Content - Cloud or Datacenter

- Existing Zixi Broadcaster carrying linear content
- Playout server side-by-side with Zixi Feeder
- AWS MediaConnect

Zixi + Bitmovin workflow

Encoding Worker

Storage / CDN

Video Player
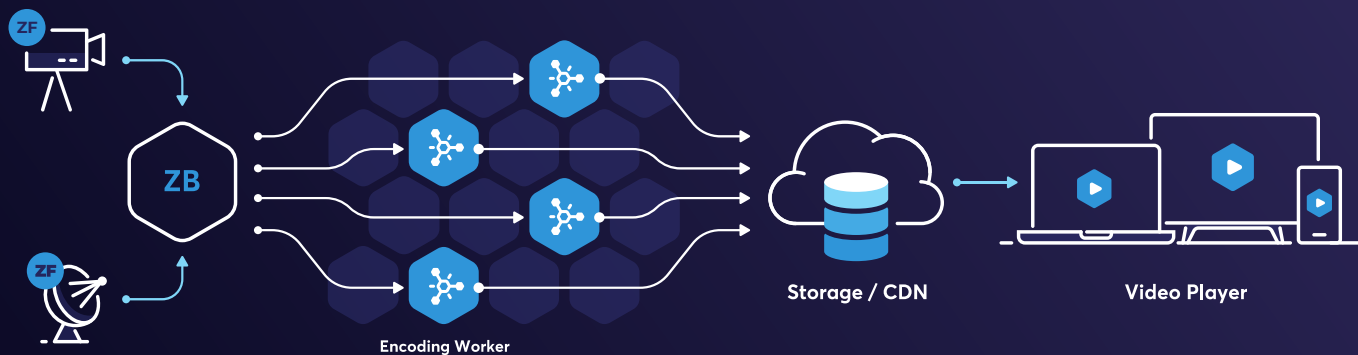
Bitmovin's containerized encoding (Live)

- Realtime Live encoding
- AV1, VP9, and HEVC Live Encoding
- 4k, 8k encoding
- Chunked CMAF Encoding
- Deploy Anywhere: Multi Cloud, On Prem
- Graceful Input Failover
- Instant Live-To-VOD
- Akamai Media Services Live Support

Zixi Broadcaster integration

- Acquires the stream with corrected packet loss and jitter
- Transmits stream locally to Bitmovin encoder

Bitmovin's player

- Enables playback across **all** platforms (using device native SDKs)
- Flexible ABR logic for fault tolerance and optimization
- Low latency playback

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Case Study fubo^{TV}

About fubo^{TV}

fuboTV is a Live Sport OTT provider with over 65 channels that rivals many traditional pay TV offerings. fuboTV streams highly demanded sports content, thus needs to constantly provide a high-quality viewing experience to retain their hard fought viewers in an increasingly competitive marketplace.

"Bitmovin's engineering team has been great to work with. We were able to rely on them to become an extension of our engineering team. Bitmovin gives us greater control over the player than any other player in the market. We were able to get our implementation to production with markedly better experience than our previous player. We're looking forward to exploring more ways to work together."

Sung Ho Choi, Co-founder, fubo^{TV}

Fubo Requirements

Acquisition
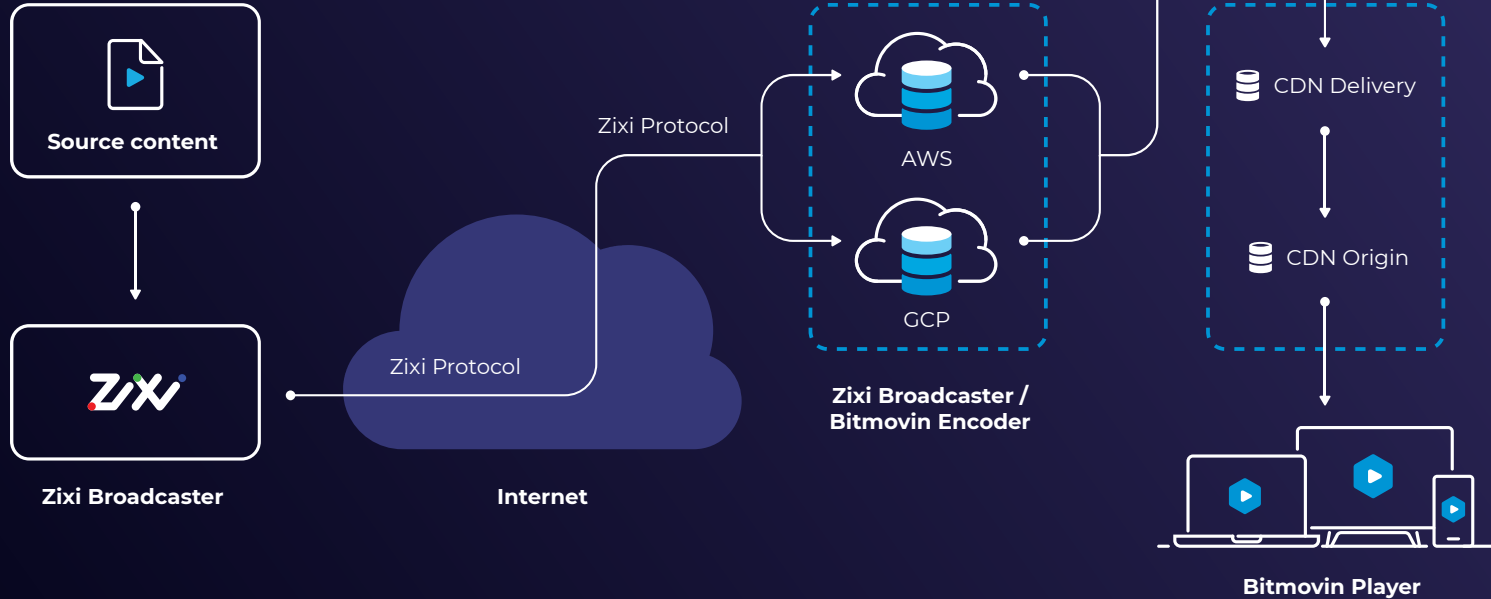Reliable, low latency contribution is a necessity

Encoding
Support Zixi and SRT input, Multi Cloud (GCP and AWS), Live-to-Vod, VP9, scaleable, quick time to market for SHOWTIME channels, BuyDRM multi-DRM support

Player
Not based on open source technology, cross-platform compatibility

Example Live Workflow

MX1, ISP, Encompass, CTS

Source content

Zixi Broadcaster

Internet

Zixi Protocol

Zixi Protocol

Zixi Protocol

AWS

GCP

Zixi Broadcaster /
Bitmovin Encoder

CDN Delivery

CDN Origin

Bitmovin Player

Fubo architecture - show content aggregation, where zixi is being used, zixi
output to Bitmovin, Akamai CDN, Bitmovin player >> cross platform

Myths

Open source protocols are free/better
- For DIY, open source protocols can be free
- For broadcast quality, 1) interoperability and 2) resilience under difficult network conditions are critical
  - Over 40 baseband encoders and 170 total integration partners
  - The Zixi protocol with congestion aware FEC & ARQ is the most mature with 10+ years of use and is the most resilient under difficult conditions

Maintaining and optimizing quality is easy for live
- Its difficult.
  - Seamless failover, access to heavy compute resources, geo-flexibility, quality optimizations help

Cloud transcoding is too expensive
- Depends on overall workflow
  - Is it 24x7 live or event based?
  - TCO can be addressed with multi-codec and optimized bitrate ladders

Key Takeaways

1

Broadcast QoS and QoE is possible

Reliability and quality can be achieved at scale with cloud-based solutions

2

Enable efficient, agile operations

Moving from on-prem to software-based means fast-to-market, and ability to iterate quickly

3

Provide economical, future-proof solutions

Custom configurations and robust partner network means a deep bench of resources to fit your needs

Q&A

Follow up - connect with an expert

Reach out to us below, or fill out our poll and we'll follow up with you!

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info@zixi.com

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Thank you!

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