ANY IP NETWORK, ANY PROTOCOL, ANY CLOUD PROVIDER, ANY EDGE DEVICE

The case for a Software-Defined Video Platform in the age of IP streaming.

A WHITE PAPER BY ZIXI

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INTRODUCTION

Defining a Category, Creating Opportunities

The media industry is evolving rapidly, with broadcasters and content providers facing more challenges than ever before. They need to deliver content anytime, anywhere to a growing number of platforms – faster, more efficiently, with higher quality and often with decreasing resources.

Today's media companies are transforming to meet their customers' changing viewing habits, which have never been more diverse - over the air and over the top (OTT), cable and satellite, in formats that include SD, HD, HD HDR and 4K, 4K HDR and 8K.

Now, with the growing use of mobile devices in everyday life, more content is also viewed over the Internet, to the point where the streaming market is expected to grow from $3B to $7.5B worldwide by 2021[1]. Audiences now expect their digital experience to be as good or better than the TV, cable or satellite experiences. "Good enough" is no longer acceptable.

As a result, flawless content contribution and distribution is now as important a consideration as image quality or production values. Point-to-Point contribution and distribution solutions are no longer adequate, End-to-End solutions are required.

For decades, broadcast traditionally relied on expensive, inflexible infrastructures comprised of bulky and disparate hardware systems. Now, content providers are migrating quickly to IP and hybrid IP networks for a more flexible and dynamic method of transporting broadcast-quality live and live linear video through and across their global workflows. IP networks can be the internet, fiber, cellular (4G,5G), or IP over satellite, and with the right video platform can consist of combinations of hybrid networks with bonded or sequential hitless networks for 99.9999% + reliability.

1. Source: Markets and Markets, March 2020.

This shift toward IP is also being enabled by increasing acceptance of the cloud as a centralized virtual platform for the end-to-end content lifecycle, addressing everything from capture and access to file storage to asset management.

The cloud has evolved and matured, with its increasing acceptance overcoming long-held concerns about data security. Infrastructure costs have also lowered dramatically making cloud-based business models more practical and attractive.

When the capabilities of a cloud-based platform combine with the practical benefits of IP transport and streaming for broadcast-quality video production and delivery, the opportunities multiply. For video production environments of today and for the future, IP networks offer significant benefits for production and distribution, including scalability, flexibility, accessibility, and intelligent analytics.

The future of streaming is certainly over IP, to not only move live content around more efficiently but to also enhance viewer engagement and increase providers' ability to monetize content quickly and effectively. These significant opportunities also heighten the critical need for one company with the ability to connect all these different elements and touchpoints, manage them and then deliver them flawlessly.

For global media and entertainment companies, the acts of provisioning, deploying, orchestrating, and monitoring large complex IP workflows require a full arsenal of capabilities that only a robust end-to-end Software-Defined Video Platform can provide.

ZIXI'S SOFTWARE-DEFINED VIDEO PLATFORM

Four Core Elements

Enter Zixi and its Software-Defined Video Platform. Zixi was founded in 2007, in many ways, as a company ahead of its time. Zixi was IP and cloud-ready long before those terms were even a thought. Throughout its history, the company has helped diverse organizations scale from simple point-to-point and point-to-multipoint to end-to-end solutions with thousands of channels. Zixi's 700+ media customers have come to understand and trust that to manage and enable broadcast-quality content across that type of scale, a Software-Defined Video Platform is required.

The Zixi Software-Defined Video Platform provides multi-point aggregation and distribution and multi-channel delivery of live, broadcast-quality across any IP network, any protocol, any cloud provider or any edge device – all with low latency, total reliability and the highest-security protection.

The Zixi Software-Defined Video Platform is the tight integration of four crucial elements that enable broadcast-quality live video workflows to be intelligently and centrally provisioned, deployed, managed and monitored using software and integrated devices, regardless of the underlying network infrastructure: Protocols & Transport, Video Solutions Stack, Zixi Enabled Network and ZEN Master.

1. **Protocols & Transport** Zixi provides an industry-leading congestion and network-aware protocol that dynamically adjusts to varying network conditions and employs error correction techniques for error-free video transport over IP. In addition to the Zixi Protocol, Zixi is integrated with 16 additional protocols for industry leading interoperability: NDI, RIST, RTP, RTP+FEC, UDP, HLS, CMAF HLS, Low Latency HLS, DASH, RTMP, SRT, Multipath TCP, TCP BBR, RTSP, HTTP, and WebRTC.

2. **Video Solutions Stack** provides essential software tools and core media processing functions enabling broadcasters to transport live video over any IP network, correcting for packet loss and jitter. This allows users to orchestrate all content and perform functions like hitless failover, which Zixi patented across any configuration and any IP infrastructure, allowing users to achieve 7-nines of reliability.

3. **Zixi Enabled Network** is Zixi's global network of 200+ integrated technology and service provider partners. This robust partner network provides customers with ease of connectivity and speedy deployment, allowing customers to leverage the largest global ecosystem for live video to create agile, adaptive live video infrastructure.

4. **ZEN Master** is a control plane that enables live video orchestration and stream management providing control over large complex network environments. This cloud-based interface provides visual and automated tools to configure, orchestrate, manage, and monitor live broadcast channels at scale and across industry protocols. It allows customers to provision, deploy, orchestrate and monitor multi-party supply chains and provides vast amounts of telemetry across an entire supply chain.

With each of these four components, Zixi's Software-Defined Video Platform takes what a dozen or more different hardware and software systems can do separately and incorporates it all into one platform.

THE "ANY" REQUIREMENT

The four core elements of Zixi's Software-Defined Video Platform enable live broadcast-quality video delivery over any IP network, any protocol, any cloud provider, and any edge device.

PROTOCOLS & TRANSPORT	VIDEO SOLUTIONS STACK	ZIXI ENABLED NETWORK	ZEN MASTER
• Performance	• Any Configuration	• Ease of Connectivity	• Unified Control Plane
• Quality of Service	• Any IP Infrastructure	• Interoperability	• Virtualized Operations
• Quality of Experience	• Live Media Processing	• Speed of Deployment	• Democratized Usability
• Protocol Switching	• Metadata Preservation	• Extended Operations	• Unmatched Telemetry
• Flexibility	• Achieve SLAs	• Agile Infrastructure	• Deep Data Analytics
• Signal Path Continuity	• Reliability	• Adaptive Architecture	• Management at Scale

The Right Solution, Right Now

The Zixi Software-Defined Video Platform is transforming how TV and live linear content is managed on a global basis. Zixi was the first company to practically deliver broadcast-quality video across the internet and unmanaged IP networks, essentially enabling the introduction of a third network, joining satellite and fiber.

Today, nearly every industry is virtualized and every major business, including broadcast TV, is moving to the cloud. There are a number of challenges associated with managing video and broadcast quality in this environment. The approach Zixi has taken is to work directly with the major broadcast media companies and with service providers to create a software video fabric that can overlay and connect all these different pieces and all these different workflows.

Broadcast linear television has always been challenging – requiring precision and enormous amounts of engineering effort. With the move to digital broadcast, OTT and streaming services, content supply chains grow even more complex and involve more multi-party interaction.

As more customers go online and develop more IP-based content, Zixi is ready to meet and support any format or resolution – today.

Software is not bounded. Where traditional hardware pieces like encoders or decoders can only support so many Megabits per channel, for instance, Zixi is unbounded with extremely high throughput. Zixi can support 4K, 8K and even 12K, which may have applications for digital cinema.

As Quality of Experience becomes more and more essential, media companies are realizing the need to have a much higher-quality picture and a much more robust set of content pieces to engage the consumer. To ensure consumer satisfaction, media companies are going to be able to not only create and execute on that experience but also measure it and have the telemetry into the stream to understand what it actually looks like as it's occurring.

Only in a software-defined world and only under the control of the right tools can organizations harvest and manage this data to be able to verify and report on it to see that a signal was delivered perfectly from point to point.

A dedicated, let alone a virtualized, infrastructure is a significant engineering challenge. But Zixi is meeting this challenge head-on and will continue to do so. It's all a matter of degree of scale but the only way to be able to connect these disparate elements is in a software-enabled world.

Use Cases and Applications

Satellite Rationalization – With the advent of 5G and reallocation of C-Band, more customers are moving from satellite transport to IP transport because they want flexible cost rather than high fixed cost.
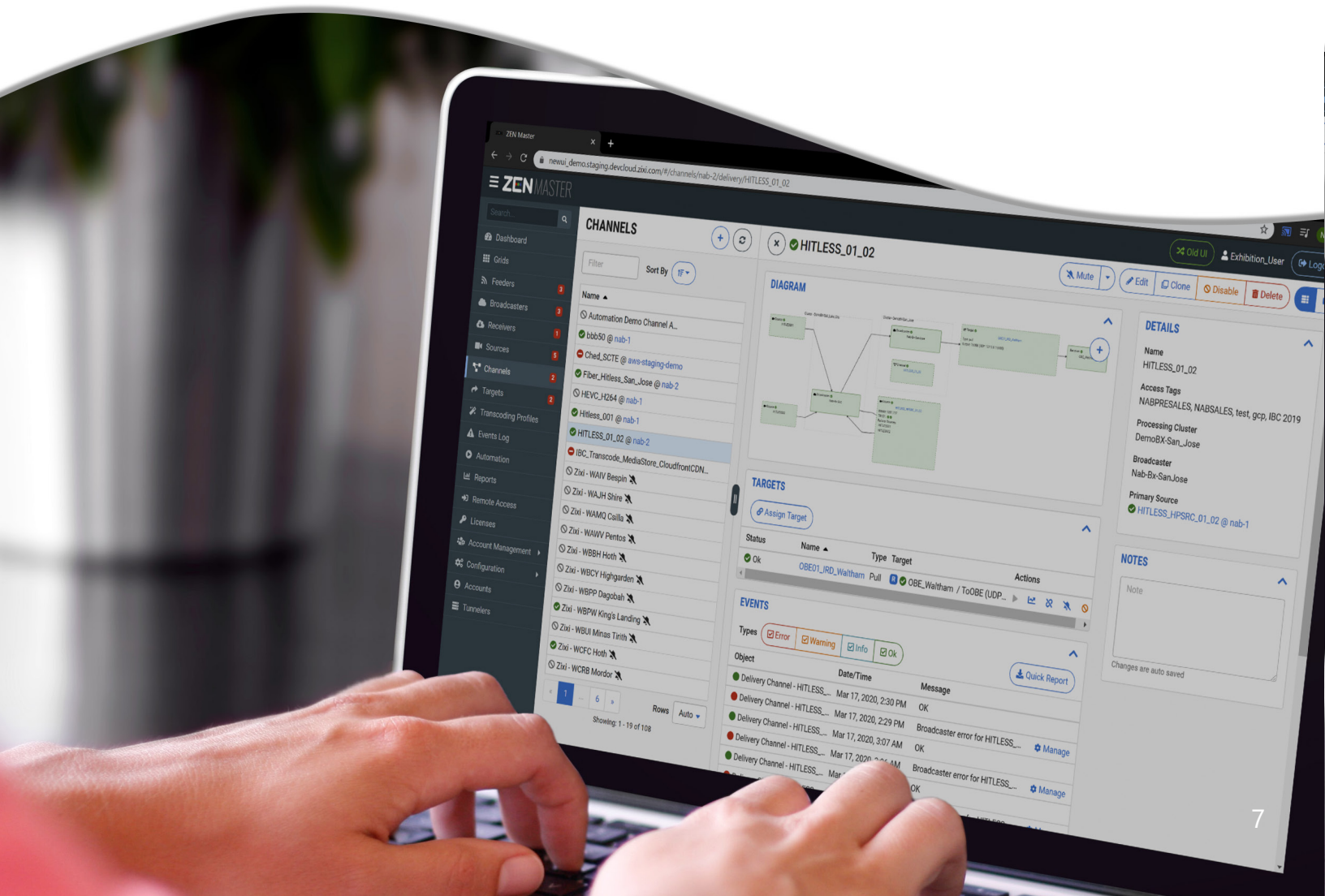
Cost-Effective Content Exchange – Zixi facilitates cost-effective content contribution and distribution for both content owners and content acquirers.

Remote Monitoring and Operations – ZEN Master provides a single cloud-based virtual Control Plane to efficiently orchestrate, monitor and manage content over all IP and hybrid IP networks, creating a simplified and agile way to manage large IP implementations remotely.

Enable New Revenue Sources – Zixi helps content providers monetize more content and content formats across new platforms, such as Smart TVs, OTT platforms, etc. driving top-line growth with little incremental cost.

Virtualization of Infrastructure – Move from hardware-based to software-defined in order to gain workflow flexibility and speed/agility across multiple vendors for optimal operational efficiency.

Universal Content Ingest – A single platform to ingest content from any IP network, from any end device, using any protocol, utilizing any cloud provider.

AN UNLIMITED FUTURE

Zixi has identified several growing areas for applications of its Software-Defined Video Platform, including:
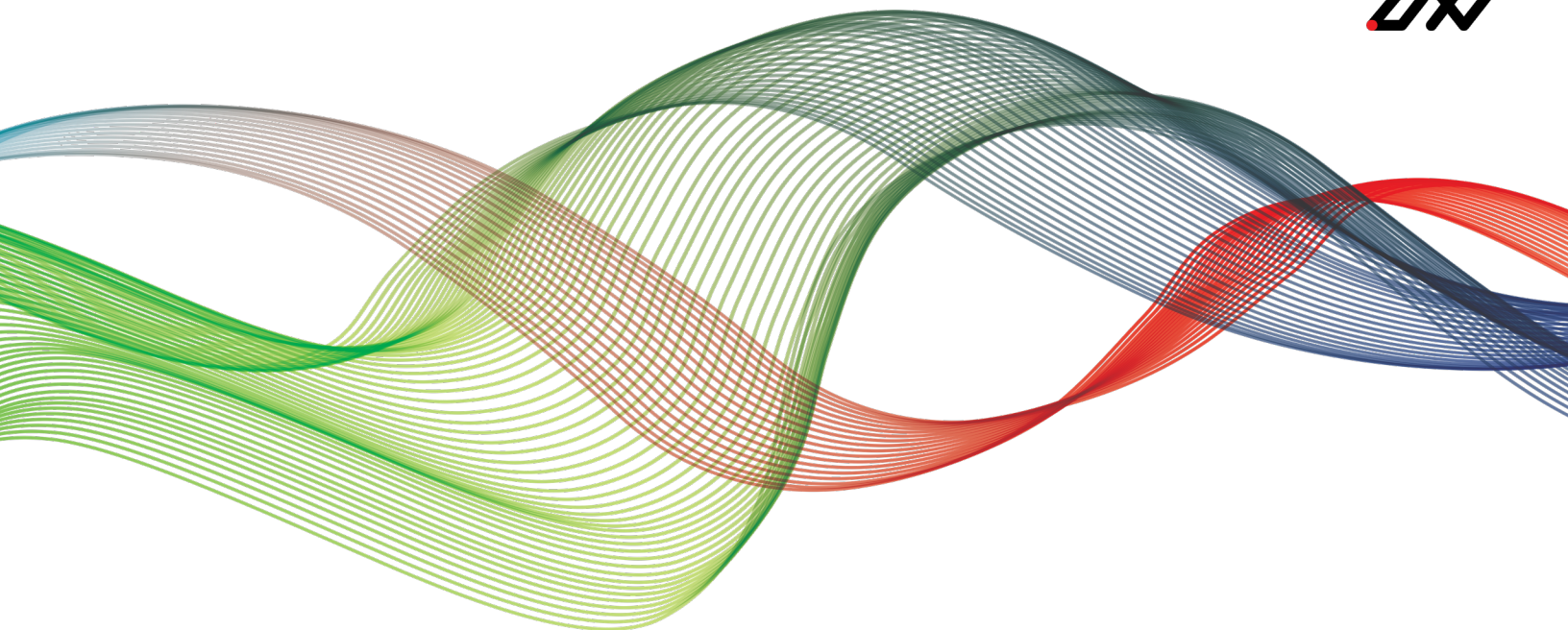
- **Machine Learning/Artificial Intelligence** – Adaptive technology enables increased efficiency for customer's network operation centers making analysis of video more efficient. Zixi is already employing Machine Learning with ePSNR technology that estimates encoder quality without needing to refer to a source video file.

- **5G** – With the roll-out of 5G, there will be increased demand for faster, video transport with a broader reach, and IP backbones will become even more essential content transport pathways. Zixi can provide lower latency, higher quality transport over 5G, in rural and city settings.

- **8K Video** – As consumers' appetite for better quality, more immersive 8K video grows, this will create enormous bandwidth and bitrate demands. Zixi is trusted and proven to send these larger files with necessary protection and low latency.

- **IP Satellite** – The launch of smaller-scale, IP satellites will create internet paths in space for multi-purpose use and will make IP distribution more cost-effective in untapped areas. Zixi can provide an economical method for distribution over IP Satellite to rural areas around the globe and offer needed protection against packet loss and jitter.

And these are just a sampling. There are many other shifting tectonic plates that bear watching, especially as Zixi enters new markets like telecommunications and carriage.

The extremely high bit rates and resolutions that are enabling new ways of shooting, capturing, producing and distributing content are only going to create many more of the engaging experiences critical to holding audiences' attention in today's world.

Readying media organizations for all of these emerging capabilities comes back to one constant: the only way to do all this is with a Software-Defined Video Platform. Companies can try to manage certain pairings of "this hardware" to "that hardware," but the intensive demands of broadcast require multiple levels of interoperability.

In theory, anyone can write software, but with over a decade in the business and hundreds of thousands of people, time and cost resources invested in this platform – and the proven results Zixi has generated for organizations of all types – there really is no viable alternative.

RESOURCES

Zixi Sales

If you would like to speak with a Zixi representative to learn more about Zixi's award-winning solutions for live video streaming or are interested in downloading a free trial of Zixi software, please reach out to sales@zixi.com.

Zixi Partnerships

If you are interested in joining the Zixi Enabled Network of over 200 integrated technology partners and services, reach out to SVP of Alliances and Marketing, John Wastcoat at john.wastcoat@zixi.com.

General Info

For general inquiries, please reach out to info@zixi.com.

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