tools that will store, index, and process your content so that it can be leveraged and delivered effectively and efficiently.
Superguide 3: Workflows & Asset Management Superguide

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THE RISE OF A NEW DEMAND - AND A DIFFERENT PROBLEM

The acceleration of video production and content consumption is well known and is expected to reach a staggering 2.7 Zettabytes by 2020. What is not equally understood is how Broadcasters, OTT/xVOD providers, Online Video Platform services and others will handle the “pixel explosion” – fueled by the growth of screens, devices, platforms and video formats.

When demand increases, how will you serve high-quality content to viewers’ screens? At that moment, it is too late to reconsider the transcoding solution, and you either triumph or fail.

Scaling transcoding to demand is difficult, slow, and expensive. Anticipating capacity requirements from unpredictable consumption is a challenge; spikes and dips can arise from a variety of factors. Responding to demand with today’s on-premise or cloud-based solutions is time-consuming as transcoding services take days or more deploy and configure. Static licensing models make it expensive to budget for and invest in solutions that sit largely under- or un-utilized.

VIDEO AS A VIRTUALIZED HYBRID SERVICE

Fragmented supply chains will integrate content owners, publishers, and providers in virtual, Hybrid ecosystems, and new technology solutions are clearly needed. It’s important to distinguish between virtualization and the on-demand cloud and to have an understanding of IaaS, PaaS, and SaaS models.

Regardless of business models, the media industry needs more cost-effective, elastic and Hybrid solutions that leverage on-premise, datacenters, public/private cloud solutions to run virtual transcoding clusters to meet demands for pricing and performance.

Hybrid-enabled technology offers an ideal combination of on-premise security and control with demand-driven, dynamic utilization to maximize performance and efficiency vs. cost.

Hybrid cloud operation is not without challenges. On-premise resources are augmented dynamically with services from the cloud and this requires strict delineation of protected vs. less critical data and processes. Shared workflows can be outsourced to the public cloud, while critical processes and files are kept in the private domain.

As video publishing and consumption enters a “virtualized ecosystem”, the advantages of a Hybrid model can be leveraged to great benefit. At the same time, the technology must address the challenge of rapidly growing systems and operational complexity.

A TRANSCODING ENGINE BUILT FOR THE HYBRID SUPPLY CHAIN

Video transcoding is an important part of the media supply chain and the pixel explosion breeds new formats and performance demands. Traditional technology was straightforward and predictable - a defined platform with fixed capacity and limited flexibility. Hybrid transcoding solutions must meet several fundamentally new requirements:

- Deploy to cloud, on-premise and virtualized platforms
- Support for relevant formats with a predictable output quality
- Manage transcoding resources throughout the ecosystem
- Intelligent and automated job distribution and monitoring across platforms
- Reporting – and billing – based on utilization
- Access and use from anywhere
- Ease of integration with other systems

Recent innovations with “containerization” technology, for instance from Docker, lets a software codebase run on different platforms without loss of performance or functionality. A true cloud-enabled solution does not only “work with cloud”, but is
“cloud native” and can be deployed “into the cloud” and automates resource management to minimize costs and adapt to changes.

With Docker, software can be deployed to Cloud, Virtual Machines and COTS HW/SW. Cloud providers support containerization to allocate instances as needed for dynamic “spin up/down”. With on-demand resources, spot pricing, and reserved instances, Cloud and Hybrid solutions are more scalable and cost efficient than before possible. Additionally, by supporting file folder/object storage standards such as SMB, FTP and S3, solutions can access and deliver data from/to any location throughout the virtual supply chain.

Distributed transcoding solutions must manage and allocate tasks across the different instances. Parameters for geo-differentiated pricing, computing profiles, task priorities and video formats are dynamically evaluated to optimize performance vs. costs.

Finally, a Hybrid transcoding platform must be easily integrated with supply chain through open, documented, and accessible RESTful APIs.

THE FLICS TRANSCODING PLATFORM – BUILT FOR THE HYBRID SUPPLY CHAIN

Avioon built the FLICS transcoding solution to meet the new challenges while supporting live and file-based media workflows. FLICS leverages Docker to let customers deploy “swarms” of transcoding services to any combination of nodes on premise, in virtualized datacenters, and private or public Clouds.

FLICS scales horizontally and vertically so broadcasters, OTT/OVP providers, converged cable headends and others can implement advanced, reliable and robust transcoding services to handle changing demands with flexible and predictable operation through XaaS and one-off pricing models. FLICS offers optional GPU-acceleration and can deliver the performance needed for 4K and 8K processing in time-sensitive environments.

For existing production environments and supply chains, FLICS integrates seamlessly with its open and documented RESTful web services APIs. A web-based user interface provides monitoring and full control of all services and integrations with customer-owned Cloud services from Amazon, Google, Microsoft and others.

HOW TO USE FLICS HYBRID TRANSCODING SERVICES

The FLICS transcoding solution is ideal for different scenarios such as “traditional” file and live broadcasting video production, and future-oriented implementations for OTT and xVOD services and ad hoc multi-screen delivery in virtualized and cloud-enabled ecosystems.

Key success factors for a FLICS Hybrid transcoding solution include the right design for platform choices and integration, rules for dynamic task management based current and future content volume/processing, and leveraging the built-in reporting and tracking for real-time monitoring and management.

A FUTURE-ORIENTED SOLUTION

FLICS evolves to anticipate Avioon’s vision of the industry’s needs, new capabilities from technological innovations and changing business and operational models. Transcoding services is a natural choice for a distributed digital supply chain, but as more Cloud and Hybrid-enabled services emerge, the FLICS platform can incorporate components such as Quality Checking & Analysis, Rights Management & Protection, Metadata Extraction, Transfer & Distribution, and more. Customers can use the hyper-scalable FLICS model to build cost-effective, integrated and automated operations that respond dynamically to viewer demands and changing conditions.

ABOUT AVIOON

Avioon develops high-performance and scalable software products for the expanding media industry and leverages the latest technology to ensure that our solutions meet the demands for rapid implementation and cost-efficiency. We enable flexible business models with cloud-native, on-premise or hybrid technology and support XaaS-based operation within distributed media supply chains. Avioon was founded in 2014, is privately owned, and services customers and partners from our offices in Cologne, Germany.
We don’t believe in prescribing a one-size fits all video delivery workflow for our clients. From our experience, each broadcaster and content owner has specific requirements for their video workflow, whether it be interfacing with existing systems, dealing with legacy content, non-standard subtitles or just needing to process video in a specific way. Our solution has always been to use our established building blocks/best-of-breed tools and use them to construct flexible video delivery workflows that are tailored to each of our clients. This flexibility allows us to respond to a fast-changing video landscape more quickly than some established off-the-shelf solutions.

We have created a set of integrated products to manage the end-to-end delivery of video and audio. Used together or on their own, our products can easily fit into existing workflows or be used to create a whole new one. We integrate with many leading commercial products including Unified Streaming, MediaExcel, mpix from Comcast, Youbora, JW Player, THEOplayer, Dalet, Cedexis, all leading CDNs, and many more. Our solutions are based on the latest cloud technology, utilising the best and most advanced features of AWS to provide resilience and scale.

At the heart of our broadcast ecosystem is our VUALTO CONTROL HUB software that provides centralised configuration, an administrative GUI, task engine, and API that allow us to deliver, VOD, live and Live2VOD services with studio-approved DRM. Our player plugins allow online and offline playback on multiple devices.

Using this combination of products and services, we design, develop, manage, and monitor customised video and audio delivery workflows for a range of industries to include broadcasters, sports, media and entertainment, OTT service providers and telecoms & operators.

**VUOD—BUILDING A VIDEO ON DEMAND WORKFLOW**

With VUOD, we can build a customised VOD workflow using our simple API to control ingest, encryption, callbacks, and delivery. We deliver pre-processed VOD files or encrypt and transmux just-in-time, using the latest streaming servers to provide HLS, HDS, MSS, and MPEG-DASH.

Able to cope with thousands of VOD titles, our ingest and packaging process uses a fully scalable and resilient task engine. Our caching mechanisms protect the origin from unnecessary CDN requests. We can store and organise rich metadata or integrate with your own CMS or APIs, or we have ready-made integrations with commercial applications such as Brightcove, Dalet, and Comcast.

**VULIVE—SUPPORTING EVENT AND CHANNEL BASED LIVE WORKFLOWS**

VULIVE is designed for both continuous and event-based streaming. Based around world-leading software from our partners, Unified Streaming, VULIVE provides support for encrypted or non-encrypted MPEG-DASH, MSS, HLS, and HDS across many platforms and devices.

We can provide complete control over the live streaming workflow. Streams can be scheduled, previewed, stopped, started, and paused. Flexible configuration across all the stream formats including fragment length and cache headers. We support multiple audio, subtitles, and blanking at the origin level.

VULIVE provides full control and configuration of
the DVR window and archive buffer windows for rewind, watch from start and playback of virtual sub clips. We can switch off DVR during a live stream if required via both our APIs and VUALTO CONTROL HUB admin Interface.

**VUREPLAY—HARNESSING THE LIVE WORKFLOWS FOR LIVE2VOD**

In the past, the provision of a VOD catch-up service meant a separate encoding and delivery workflow that was often disconnected to the live architecture, meaning additional hardware, software components, DRM processing, and monitoring. Our VUREPLAY service provides the ability for broadcasters to deliver immediate and long term catch-up services from live streams. With VUREPLAY, content can be made available immediately for on-demand viewing on multiple target devices or live broadcast feeds can optionally be re-packaged with dynamic content replacement and insertion to provide an element of personalisation and targeting.

We understand that Live2VOD can take several forms, from providing access to an instant archive, to the creation of a longer-term VOD library. Providing viewers with VOD services that are created directly from live and closely coupling the live and VOD workflows together simplifies the video delivery ecosystem and potentially reduces encoding and processing cost and time.

VUREPLAY is flexible We support three types of Live2VOD.

**VUDRM—INTEGRATING ENCRYPTION INTO THE WORKFLOW**

Our VOD, live, and Live2VOD workflows can all be integrated with VUDRM, which provides PlayReady, Widevine, Primetime, and FairPlay. The flexibility of VUDRM allows our clients to mix and match their DRM technology providers within their video delivery workflow. Our APIs provide easy integration options allowing clients, for example, to use their current supplier for PlayReady licenses and Vualto for Widevine and FairPlay. The VUDRM product set consists of a number of APIs and microservices deployed as separate Docker containers in AWS across multiple regions. This means that each part of the system can be scaled independently.

In summary, our video delivery workflows provide highly resilient and scalable live, VOD, and Live2VOD solutions based on our broadcast experience and proven track record. Our VUALTO CONTROL HUB software components manage all aspects of the video delivery including scheduling, encoder control, ingest, metadata management, encryption, multiple audio, CDNs, Live2VOD workflows, and more. We support integration with many third parties including encoder manufacturers, ad servers, players, and CDNs. We support flexible operating models—either full SaaS, SaaS in the client’s cloud environment, or handed over post configuration to the client team. YOUR WORKFLOW – YOUR WAY.

**ABOUT VUALTO**

VUALTO are innovators in next generation workflow integration, orchestration and transport solutions, enabling you to make your online video happen. Accessed via our cloud based VUALTO CONTROL HUB and powered by our open, extensive and customisable APIs, we provide a suite of products and services for flexible video applications. These include: live (VULIVE) and on demand (VUOD) IP video delivery to any device, instant Live2VOD automation (VUREPLAY), Digital Rights Management (VUDRM) and Player SDK’s (VUPLAY). We can design new concepts from scratch or integrate into existing workflows, developing a market focused solution entirely suited to your needs.