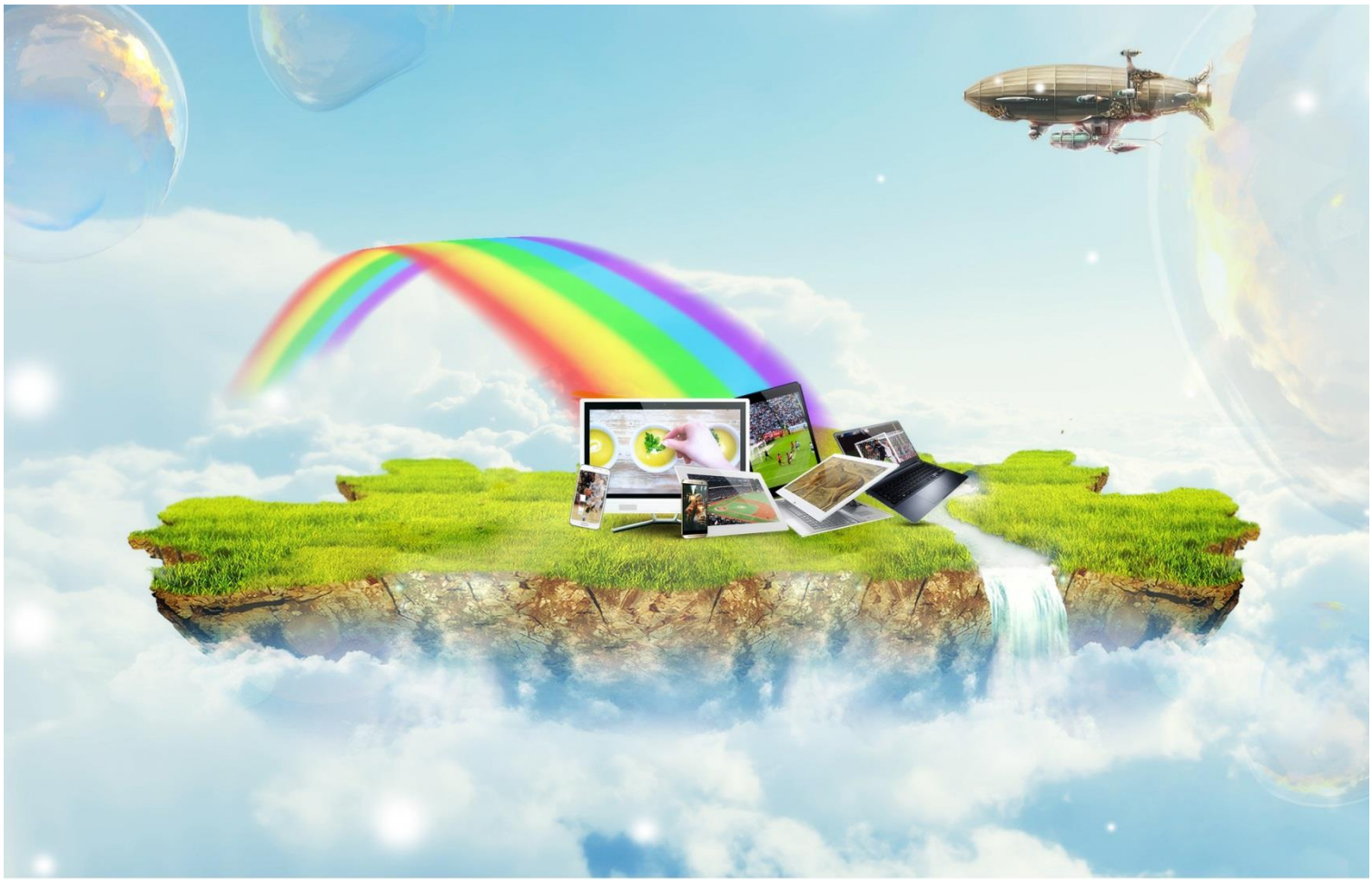

TV Everywhere as a Service: A Voyage to Delivering the Promise

Meeting Video Challenges with Greater Agility

A Viaccess-Orca White Paper

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Introduction

Driven by changing competition and new consumer trends, Pay-TV operators must constantly enhance their overall customer experience, add new features and programming, and present the most compelling alternative for today's consumers. Now they must move faster than ever if they are to be viable to online video users who live in the mobile world, as well as to continue as 'the screen of first choice' for traditional Pay-TV consumers.

Although Pay-TV service creation and infrastructure solutions have matured and become more sophisticated, most of them are made up of components from multiple sources, where each supplier enhances its part at a different pace. Also, this infrastructure represents both a significant initial investment and an ongoing expense for software, equipment, upgrades and maintenance. Operators must also maintain the in-house expertise necessary to keep it all synchronized and running smoothly, engage outside providers of professional services for integration and operations, or in many instances, do both.

A new approach toward reducing costs, time-to-market, and time-to-change, is to place service delivery resources in the cloud. The concepts of software-defined TV and virtual service creation, combined with new software development and IT methodologies, promise greater service and feature agility, while shielding operators from many of the nuts and bolts.

Service management solutions that have been available to date are either fully premises-based, or implement a hybrid of cloud- and premises-based infrastructure; with systems that reside entirely on customer premises sites, in an external hosting facility, or both. These platforms still require capital expenditures.

Key Uncertainties that Necessitate a New Approach

> "Changing service models, new technologies, new forms of competition, and changing consumer preferences create big challenges for video providers"

Not so long ago, TV providers were primarily concerned about competition from other TV providers: cable versus satellite versus the Telcos. But now, the industry landscape has changed immensely.

Multiscreen Delivery

Operators know that they need to keep up with consumer trends and preferences. A decade ago, the big battleground in Pay-TV was to be the first to bring high definition programming HD set-top boxes. Now, not only is multiscreen coverage a necessity, but also, operators need to reach as many types of devices as possible. If the video provider isn't reaching the full complement of connected devices, the provider becomes invisible to more and more consumers.

For Pay-TV providers, going multiscreen also means supplementing conditional access with DRM. Service providers that offer TV services to PC users were disrupted in 2015 when Google changed the architecture of its Chrome browser, and any operator using a video player that doesn't support it also loses access to all of these Chrome users. With Chrome at about 50% market share, no operator wants to lose half of the customers accessing their services via the PC.

Every time a new class of device comes along, service and content providers must update their service delivery and security platforms, by upgrading or adding new software modules in order to accommodate them.

Increasing Competition

As video moves from TV and physical media to delivery online, competition among video service providers continues to intensify. With the Internet as a new channel of video distribution, online distribution is an absolute necessity. Online competition has forced operators to expand from their traditional 'TV-to-the-TV' business and expend resources in unfamiliar areas.

Not only are Pay-TV providers competing against premium online aggregators like Netflix and Hulu and retailers like Amazon and Tesco; they're also competing against broadcasters like CBS, movie studios like The Walt Disney Company, TV networks like HBO, user-created video from YouTube, and even social media providers like Facebook. All of which have moved to cut out the middleman by launching direct-to-consumer services of their own.

Some Pay-TV providers have moved to defend their turf, by embedding online video and social media within their own user experiences, thus giving consumers fewer reasons to step outside of their worlds. In some cases, operators embed access to online video portals such as Netflix as a channel within the Electronic Program Guide. The integration work that's necessary to do this is significant and expensive.

Device makers are competitors in their own right. Many device products are designed to be channels of distribution for services, content and advertising; either with services of their own, or by collaborating with content partners that help to add value to the device.

Figure 1: Non-traditional competition challenges traditional operators

Apple's business model is to sell devices that make the process of buying apps and content as easy as possible, and take a percentage of the revenue. Amazon's Fire tablet and streaming video devices are a distribution channel for their own content through Amazon Prime, and it's worth noting that Amazon recently discontinued the sale of all streaming video devices other than Fire. Google's Chromecast functions as a channel for Google's advertising model, which represents a majority of Google's revenue.

If Pay-TV operators are to reach these devices, they must both play well in those device environments, and acknowledge the device makers as competition. Also, these device makers have created additional barriers by bundling their devices with device-specific operating systems, proprietary DRM and consumer-facing services.

From humble beginnings, Google has become a major force to be reckoned with. In 2010, Google made an ambitious but failed play in the US, by introducing Google TV, which consisted of a core software platform that integrated the Pay-TV with online video and search. Google enlisted the collaboration of an ecosystem of partners, including Intel, Logitech, Adobe, satellite provider Dish Network, and the retailer Best Buy. At the same time, Google TV was made available to major consumer electronics manufacturers, to embed in TV sets and Blu-ray players. Although the concepts were strong, the execution was flawed and all of the parties involved lost money. But Google learned from this experience.

Now, Google's Android TV comes in two flavors: one that's open source and available for custom integration, and another that's bundled with Google's application software and advertising platform, which effectively commits operators to sharing their customers' media consumption patterns with Google.

It's no surprise, then, that cable and Telco broadband network providers are frustrated with how these online content and device powerhouses use the network provider as a dumb pipe. Operators have no choice but to both accommodate them and at the same time, compete against them head-on.

Large Upfront Investment in the Face of Change

To enable service delivery to all of these consumer devices – not to mention the full range of TV use-cases - a complex ecosystem must be put in place. Just to provide traditional TV services, operators need to integrate video ingestion and encoding, storage, network delivery, conditional access to secure devices and video transport, client middleware for presentation, and captive consumer end devices. With multiscreen, the infrastructure requirements for video encoding, security, and content delivery are multiplied.
There are many pieces to the infrastructure puzzle, their enabling technologies change rapidly, and operators need to continually update their service infrastructures to accommodate them. Multiscreen delivery involves multiple networks; not just the operator's private fixed network, but also, mobile and Internet Protocol access.
Operators need a service delivery platform to create a common management framework. Content must be prepared in multiple formats, and Conditional Access (CA) must be complemented with Digital Rights Management (DRM) to secure the content itself when the devices in use are unmanaged. To aid in consumer engagement, most operators today put a content discovery and recommendation platform in place. Furthermore, not only must content be secured to the consumer end device, but with social video sharing, it must be protected against unauthorized or illegal redistribution after the intended consumer device. These elements add up.

It All Takes Time

It's a huge challenge to integrate and orchestrate all of this, using traditional systems and software, especially in the face of rapid change. While some vendors claim that the process of starting up a new service platform takes as little as a few months, most operators report that the process takes a year or more. Even small operators can take many months to reach commercial service. By the time a new feature or service reaches the market, the operator still risks missing the target because of unanticipated consumer demands, new business and content models, and more competition.
Then, getting from initial service to maturity takes an iterative process of new releases, each with new components, new expenses, and unexpected pitfalls.

Industry Consolidation

Industry consolidation among operators represents yet another moving part to the puzzle. In the United States, for example, just in 2015, AT&T acquired DirecTV, Altice acquired Cablevision, and Charter Communications was in the process of acquiring Time Warner Cable and Bright House Networks. In all of these cases, the merging companies use different service-enabling technologies and platforms.
As consolidation continues, the resulting companies will want to ensure smooth transitions that don't disrupt the user experience or the continuity of their services. The operator must choose whether to integrate these platforms, run them separately, or extend one of them to cover all of its new subscribers while decommissioning the other. Often, operators that merge will keep multiple systems in place, which complicates the process of support and service enhancement even further.
With such variety in services, content, devices, software, systems platforms, and networks – and in the face of sweeping industry consolidation - it's more important than ever to use an approach that's capable of managing them under a common umbrella and in a more abstract way.
The cloud has emerged as one potential solution.

Solution Requirements for Success

> "To keep up with consumers, video providers must excel in delivering services they are not so familiar with"

The situation described so far is complex to say the least. It's a challenging combination of increased competition, new business models, new devices, new technologies, and industry consolidation. If they are to succeed, operators must effectively and quickly navigate this new ocean.

All of these challenges represent a new opportunity for video providers to monetize services online, but this also means that traditional TV providers must excel in delivering within service models that are unfamiliar to them. At the same time, they can't ignore the bottom line. They need to make sure that the revenues enabled by new services outweigh the costs of putting new service infrastructure in place. Ongoing expenses associated with maintenance and support are a key consideration as well, and that includes the technical staff that's tasked with keeping it all running.

All four types of TV service providers – cable, satellite, broadcasters, and the Telcos (including mobile) – have been compelled to introduce multiscreen services. The deployment and operation of a multiscreen TV service is a huge undertaking, and it consists of many components.

In the traditional cable, satellite and terrestrial broadcast worlds, most of the intelligence behind the consumer experience resides in the TV set-top box, in the form of client middleware. With multiscreen delivery, video providers must manage not only a range of different types of consumer devices, but also manage delivery in across multiple network platforms. Also, different device environments have different video rendering capabilities, and different security requirements.

Furthermore, video providers must orchestrate the delivery of all of their services to all devices. They must package and securely deliver common experiences across devices in a device-appropriate way. Different content entitlements, business rules and advertising models apply to different screens. All four types of TV providers are dealing with infrastructure that they are not familiar with.

Figure 2: Orchestrating content delivery to all devices

Available Solutions

"The range of video platform solutions available today can be bewildering to video providers"

There are three general approaches to multiscreen service delivery. The first approach is to implement traditional TV service delivery platforms that reside within the video provider's facilities. The second is to adopt appliance-based solutions that utilize the same kinds of components as on-premises platforms but reside in outside hosting facilities, or a hybrid that combines premises-based and hosted systems. The third approach is to utilize a fully service-based, cloud-based streaming service platform.

Premises-based Approach

In recent years, the vehicle of choice to achieve multiscreen services has been the TV service delivery platform (TV SDP). SDPs define and manage Pay-TV services, create and oversee the TV user experience, define and manage subscribers, oversee devices, and associate video content with services. The current generation of SDPs can deliver the experience to traditional TV STBs over managed networks and to unmanaged devices that take delivery via the open Internet (OTT), and to mobile devices over managed or unmanaged access. SDPs also package content and track content usage, and interoperate with external content protection, video processing and storage, advanced advertising, search and discovery, and content management systems.

SDPs typically reside at the operator's premises, but they are not the only major elements that reside there. Other elements include the server side components of the operator's Pay-TV security systems (conditional access, digital rights management), content management, and network management.

Some Tier-1 solutions have been promoted as single integrated solutions when in fact they have been integrations of previously disparate platforms that have already taken years to integrate and are even now not yet in commercial service – and even then, major components (such as security) are third-party.

Hosted and Hybrid Approaches

A second approach emerged to reduce the number of systems and servers on premises. Systems integrators, network service providers, and online streaming platform service providers have all stepped forward to host some of these components in their own data centers. Vendors have packaged their systems as stand-alone appliances that integrate their software with pre-defined systems hardware, to make service hosting more convenient.

Hybrid TV service platforms that use a combination of public cloud, appliances on premises in the data center running virtual service instances, and video processing equipment in the headend; most of which is CapEx. Also, this does not address the fact that these systems could be hosted in multiple locations, which means that the overall task of management isn't necessarily simplified.

A variation on this approach has been to host the entire service creation and management infrastructure offsite, with a single service provider. This is a step in the right direction, because, from the video provider's perspective, it reduces the complexity of service management. However, most service-based solutions were developed for online (OTT) video delivery, and do not satisfy an operator's need to serve both traditional TV CPE and streaming video device users. Most of them are capable of serving mobile devices, PCs, and streaming video players, but not traditional TV set-top boxes.

All these approaches have one thing in common: they lack a single common service management tool. Either there are separate management platforms for security and service creation, and sometimes, separate content management and CPE management components without a common interface – or, they don't span the full range of devices that established Pay-TV providers must serve and manage.

The ‘TV Platform as a Service’ Approach

A new approach is to offer a complete cloud-based TV ‘Platform as a Service’. This category of platform is offered via an OpEx model that requires no infrastructure on the operator premises.
The advantage of this approach is that it shields the operator from having to make significant capital investments for equipment and software that go out of date.

Under the PaaS approach, operators can evolve rapidly to handle new services, new business models, and new types of end-devices without disruption. Unlike the other approaches, none of the components are implemented as discretely-defined systems or as appliances, and there is nothing to maintain on the operators premises.

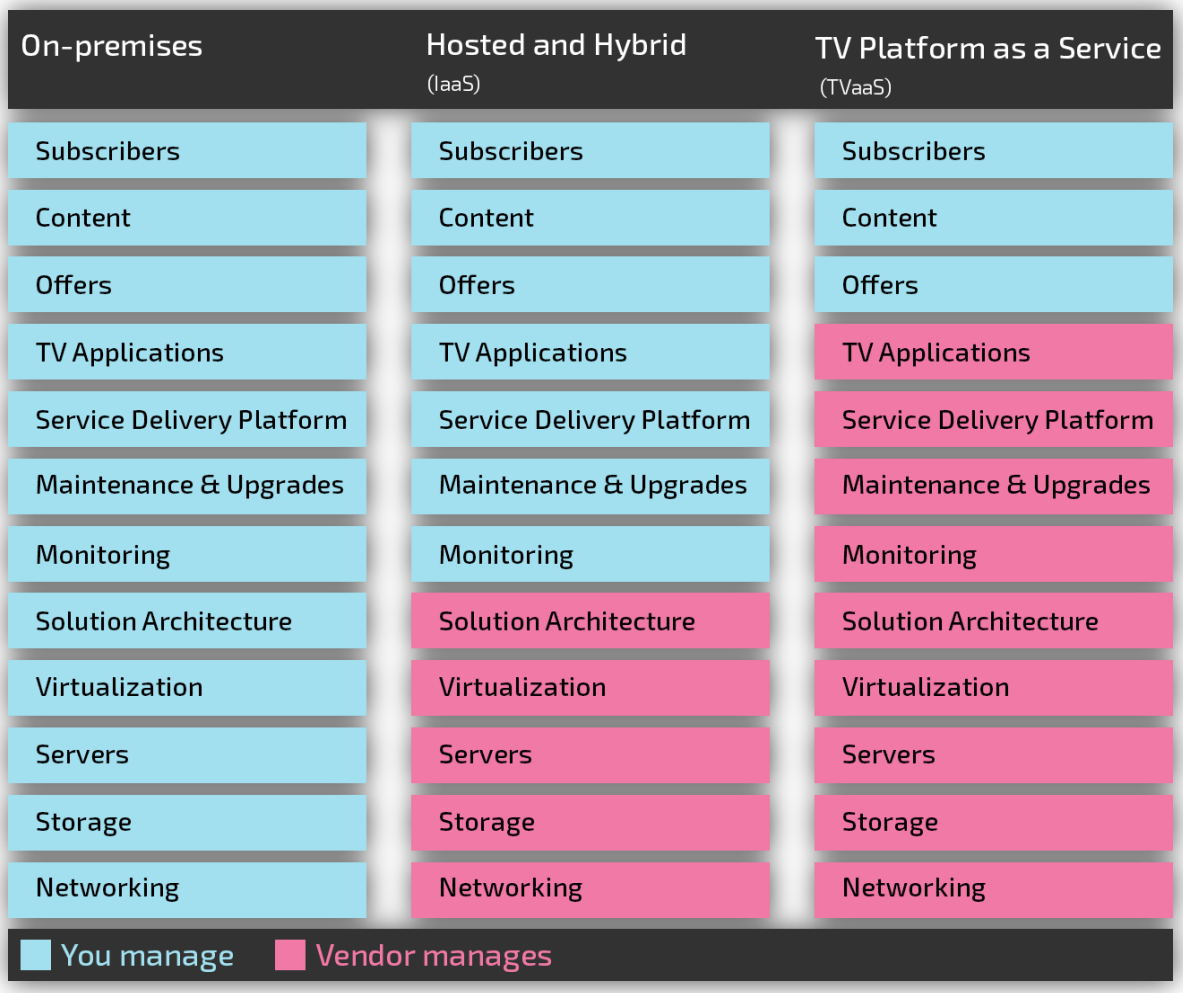

Figure 3: Comparison of approaches to multi-screen delivery

Conclusions

"Every upgrade represents a new expense and yet another integration project"

Experienced Pay-TV operators know exactly how challenging it is to launch and sustain a viable service. They face multiple uncertainties, due to competition from other operators, device makers, online video providers, and even from their own content suppliers.

Traditional on-premises solutions are built from interdependent systems, SDP, security, personalization, encoding, storage, resources for metadata, and expensive porting for set-top boxes. Experienced operators know that whenever one piece of the infrastructure puzzle changes, there is usually an impact on another.

Every upgrade represents another integration project, and if the operator relies on an outside systems integrator, the upgrade could be expensive. There is also a risk that the integrator may not have the necessary expertise, forcing the vendor to step in. Unless the operator manages things very closely and carefully, it runs the risk of losing control of the process altogether, resulting in down-time and even interrupting services altogether.

Unless changes of this nature can be managed in a unified fashion, the operator is forever launching new components while having to manage the next integration project as it watches other service components go out of date. Even if upgrade and maintenance contracts are in place for everything, it's still being managed as infrastructure.

Software integration on the client side has its own challenges. Many multiscreen operators will testify about the challenges of integrating client middleware, secure video player, the decryption client and DRM clients from several different sources. Different vendors have different licensing practices, and even count differently. While one vendor might charge a license fee for each end user, another vendor might charge a fee for each device. It becomes very confusing when these two practices collide in a single deployment.

Time is another factor, yet existing premises-based platforms – and even some cloud-based platforms - don't necessarily accommodate agility.

Introducing VO's Voyage - TVaaS

"Viaccess-Orca understands what it takes to deploy and maintain a TV platform, and Voyage - TVaaS delivers it as a service"

The cloud has emerged as an effective way to enable multiscreen Pay-TV operators to respond quickly to all of these technical, competitive, and evolutionary uncertainties. With Voyage - TVaaS service, Viaccess-Orca enables TV operators to meet the challenges and accommodate rapid change.

Voyage - TVaaS enables operators to manage, publish, personalize and monetize content on multiple devices.

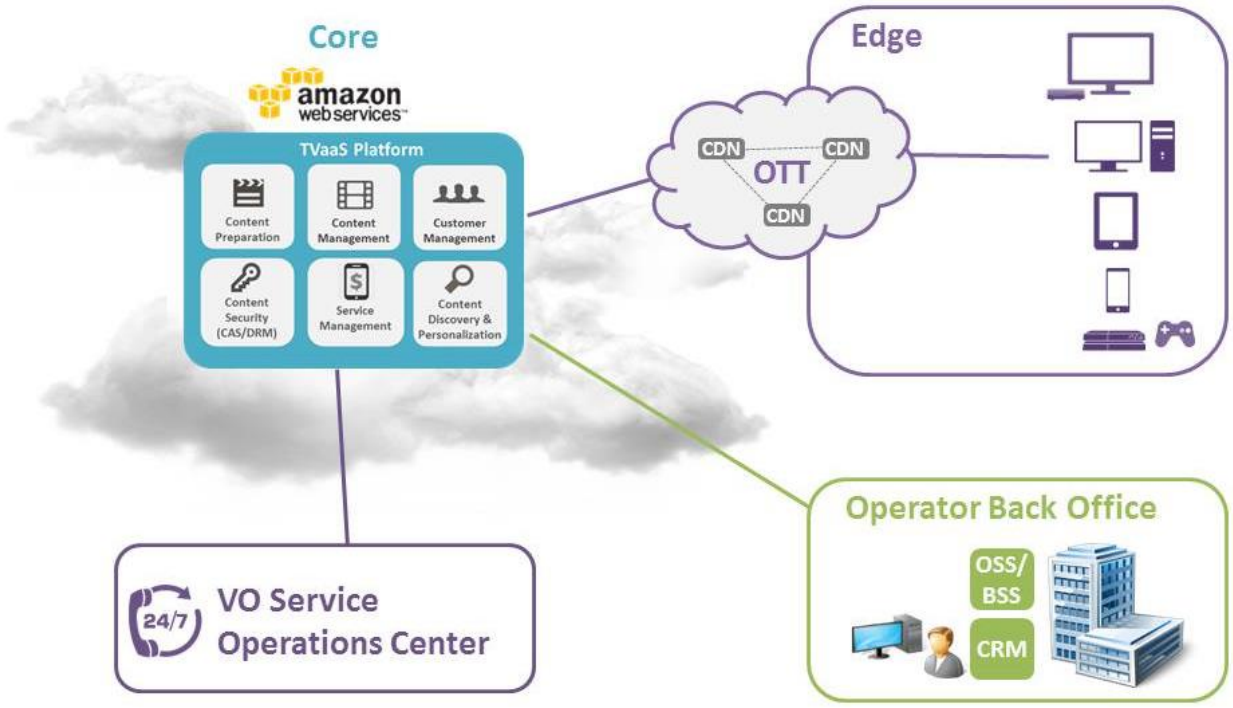

Figure 4: TVaaS - high level architecture

The foundation of Voyage - TVaaS is the service platform, deployed on Amazon Web Services.
The service and its various modules can all be managed using a single web application, the Voyage Console.

All of the Capabilities Without the Mess

Voyage - TVaaS has all the capabilities that the operator needs in order to run a successful Pay-TV service. These include customer management, content management, multiscreen security, content personalization and recommendation, mobile apps, and more; all from the same vendor. Voyage runs as a service, so the video provider doesn't have to worry about the service-enabling infrastructure or the IT.

Capabilities include:

- Content Preparation
- Content Management
- Device Management
- Content Security Management (DRM)
- Customer Management
- Service Management
- Cross-screen Convergent End User Services
- Content Discovery and Personalization

VO's service provides a comprehensive and unified service management console that manages content, services, customers, content discovery, recommendations and analytics. Using the Voyage Console, Pay-TV providers can launch new services in a few clicks, apply various operations on thousands of content assets in one command, and engage with their audience directly by defining user segments.

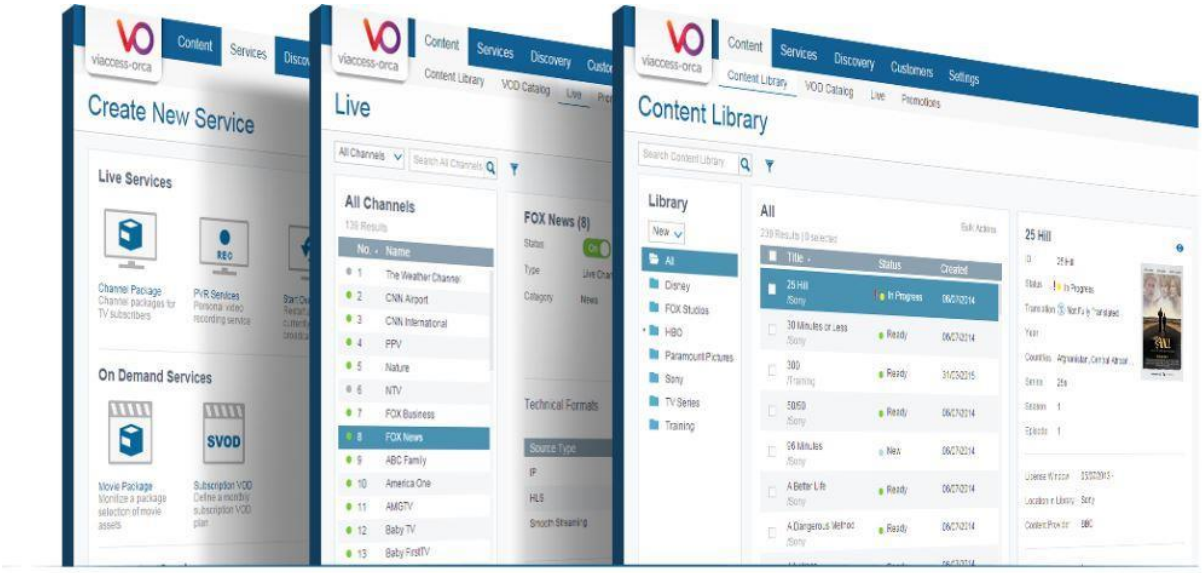

Figure 5: Voyage - TV Everywhere Console – unified service management

Voyage - TVaaS provides automated end-to-end workflows, which means that video assets can be uploaded once and then prepared, published and distributed to all devices automatically. TVaaS incorporates a comprehensive security framework that includes end-to-end DRM for all 'TV Everywhere' devices, and a secure video player.

Service availability and performance is constantly monitored. The platform also takes advantage of the elasticity of the cloud, in order to provide a service that automatically adjusts to spikes in demand from live events, which reduces the amount of time necessary to plan for service outages, as well as eliminating the need to buy redundant hardware to deal with the peaks.

As new features are required, they are added to the platform on an ongoing basis. Viaccess-Orca's advanced Voyage - TVaaS solution supports agile IT and DevOps methodologies, enabling operators to evolve incrementally and quickly, without forcing them to manage ongoing integration projects across multiple systems and vendors. A service-based solution enables the operator to manage the evolution of its service

holistically, and frees it from having to manage individual components that each have their own roadmaps, which originate from different vendors that have their own agendas. Updates and enhancements are continually rolled in to the production platform using a staged approach.

A Fully Integrated Solution for Everyone

Because Voyage - TVaaS can manage both TV set-top boxes and non-STB CPE, it's equally suitable for TV service providers and content providers, including TV service providers that want to offer their own exclusive content both within and outside of their service footprint.

All of the user experience components are internally developed and integrated, and present a single interface to consumers, regardless of the consumer device.

Voyage – TVaaS is powered by Viaccess-Orca's award winning products: RiGHTv – Service Delivery Platform, COMPASS – Content Discovery and Personalization Platform and Connected Sentinel – a multi-DRM security platform that supports PlayReady, Widevine and VO's own proprietary DRM.
VO also supplies its own secure video player. This approach has already enabled operators to avoid losing the ability to serve large communities of users, such as Chrome browser users.

It's Easy to Start

With nearly two decades of Pay-TV service delivery and security experience, Viaccess-Orca understands the challenges of putting a TV platform in place. Because it is delivered as a service, Voyage - TVaaS is all the more appealing. While the TV content and its metadata and end-user management are the responsibility of the operator, Viaccess-Orca manages the rest.

To make sure video provider's expectations are fully met, Viaccess-Orca provides a dedicated Customer Success Manager to make sure that it all goes smoothly. Voyage - TVaaS service lifecycle consists of service planning and setup, customer onboarding, service optimization and consulting, technical operations, new feature rollouts, ongoing service monitoring and maintenance, and 24/7/365 customer support.

Viaccess-Orca's pay-per-use model means that if the number of subscribers declines during the summer months, the operator pays only for the reduced number. Usage is monitored on a monthly basis, and the service fee is calculated accordingly.

Viaccess-Orca offers free trials of Voyage - TVaaS, upon qualification.
To request a free trial of Voyage – TV Everywhere as a Service, please contact Viaccess-Orca:

About Viaccess-Orca

As a leading global provider of content protection, delivery, and discovery solutions, Viaccess-Orca is shaping the ultimate content experience. Through its integrated range of business-savvy products and solutions, Viaccess-Orca helps service providers in the cable, DTT, satellite, IPTV, and OTT industries gain a competitive edge in today's rapidly evolving multiscreen environment. By enabling service providers to securely deliver an engaging user experience on any device, Viaccess-Orca is reinventing the entertainment landscape. Viaccess-Orca is part of the Orange Group.

For more information, visit www.tvaas.com, follow us on Twitter @voyagetvaas and LinkedIn.