

BUILDING A SECURE ANDROID-BASED TV SERVICE PLATFORM FOR SWISSCOM



swisscom

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- Volker Dietzel, Head of TV Development & Technology, Swisscom

verimatrix
Beyond Content Protection to Revenue Security™

Next-generation Multi-screen Pay-TV in Switzerland



OVERVIEW

Swisscom provides a notable IPTV success story, an incumbent telecom operator with more than 1.17 million TV subscribers that is now taking the lion's share of net television additions, based on Q2/Q3 2014, in a highly competitive market. The company introduced IPTV in 2006 and in April 2014 unveiled its next-generation offering, Swisscom TV 2.0.

Swisscom TV 2.0 is a landmark deployment. It demonstrates a migration from a Swisscom TV 1.0 deployment to an integrated multi-network and multi-screen service platform based in part on Android, something that made it easy for Swisscom to work directly with its initial set-top box manufacturers and reduce costs and time-to-market.

Swisscom is one of the first digital TV operators anywhere to leverage Android for its first screen offering. The project illustrates how premium content can be secured in the Android environment, including for linear and live TV, which is protected by a cardless revenue security system with a close integration into the set-top box system-on-chip (SoC) and the Android RDK.

In nine months, 300,000 homes signed up to the new Swisscom TV 2.0. Swisscom TV 2.0 has been widely acclaimed in Switzerland by both customers and reviewers.

Swisscom is demonstrating how to run two parallel IPTV platforms as part of its migration strategy and the service is “hybrid” in various ways. Time-shift functions rely on set-top box buffer memory as well as ultra-fast network caching. The set-top box Android software stack is effectively a customized tablet version that can receive managed user datagram protocol (UDP) multicast streams as well as streaming video. And in another innovation, content protection, middleware and back-office functions run on virtualized private cloud infrastructure in Swisscom data centers.

With multi-screen TV and a companion app, the service delivers on the promise of content anytime, anywhere with easy discovery. In seven months, 200,000 homes signed up for the new service; lots of them are new television customers. Swisscom TV 2.0 has been widely acclaimed in Switzerland by both customers and reviewers. It is also one of the most enlightening deployments of recent times.

SWISSCOM TV 2.0 RAISES THE BAR FOR IPTV

Swisscom TV 1.0 remains a market leading offer, but the company decided it was time for a successor product. Customer surveys showed that what people liked most about Swisscom TV was “content, content, content” and the ambition for the Swisscom TV 2.0 platform was to help them watch more of it, giving them a simpler and more inspiring TV experience.

With the new service, network DVR was introduced for set-top box viewing. Volker Dietzel, Head of TV Development & Technology at Swisscom, says it was important that customers could record lots of channels at the same time, something that was not possible before due to last mile bandwidth constraints.

Now users can binge-record at days when some of the best content is broadcast. Subscribers using the new service watch more time-shifted content than before, as well as more HDTV. “Customers really love the network DVR,” Dietzel stresses.

SWISSCOM TV 2.0

Provides an early example of what a comprehensive network DVR offering looks like, covering both set-top box and multi-screen viewing. It anticipates what consumers will demand next.



250 linear channels including 80 in HD



Approximately 7,500 VoD titles
(German, French, Italian)



Subscription VoD offering in an
advanced user interface



Seven day replay TV (catch up) —
called REPLAY in Switzerland — that
includes a “scroll-back”
electronic program guide (EPG)
and recommendations



Branded app store



Another key ambition for Swisscom TV 2.0 was to upgrade the user experience so it compared favorably with the sleek user interfaces we have become accustomed to from CE providers and online video services. The user interface (UI) is more visual than its predecessor, making greater use of cover-art, for example.

The navigation is smooth and intuitive and allows users to move seamlessly between linear and on-demand content (and therefore between UDP multicast and streaming video). The backwards-facing EPG is a good example. By clicking on a “past” program you access the catch-up and network recordings. There is also a Swisscom-branded app store with more than 50 apps (thanks to a partnership with Opera Software).

A NEW PLATFORM BUILT UPON ANDROID

Swisscom has introduced a multi-device middleware to the set-top box environment. If you look on the inside, the set-top is a specially customized tablet that has been security hardened and given a number of set-top box specific features, including the ability to receive multicast UDP streams as well as adaptive bit rate streaming and the use of a remote control.

The set-top box has a very fast boot-up time and ultra-quick channel change and features a Bluetooth Low Energy (BLE) remote control that could, in future, support set-top box devices that are hidden from view. The set-top box also supports 802.11ac Wi-Fi and can be controlled by a companion app on an Apple iPad.

Swisscom decided to use the Android Platform as the basis for the new service. This should not be confused with Google TV or the new Android TV (Google Managed Services, which gives access to Google Play services and Google branded apps). The Android platform offers an open development environment. “Android gets you to market faster,” Dietzel explains.

Android gives a hardware reference design and Dietzel says one of its key benefits is how hardware vendors are ready to work with Android. “The manufacturers know exactly what to do when you talk about Android-based set-top boxes. Android is a standard for hardware manufacturers and when you use it, you do not need OEMs any more [to do the integration work]. This helps to reduce costs.”

Swisscom worked directly with its initial set-top box manufacturers to develop the new device itself. “There were no big technology challenges when taking this approach. Lots of skills are available in the market,” Dietzel declares.



Set-top box cost reduction was a key goal of the Swisscom TV 2.0 project. Removing the hard disk, thanks to the use of network DVR, and using the Android approach ensured this was achieved.

There was a precedent for using Android set-top boxes in Switzerland. Wingo, the triple-play provider and Swisscom subsidiary, also uses a combination of Android OS and a Marvell Armada 1500 chipset on its M-Budget TV service. Dietzel views this as a successful proof-of-concept for what has now followed with Swisscom TV 2.0. With Swisscom TV 2.0, Marvell again supplied its Armada 1500 SoC platform, with a dedicated security processor.

CONTENT PROTECTION FOR A NEW BREED OF SET-TOPS

A key challenge for this deployment was ensuring that an Android-based platform can support secure broadcast television (i.e. UDP IP multicast – or “classic” IPTV) including for 1080p HDTV, in addition to a variety of adaptive bitrate format video streams. The project therefore demanded a very effective integration between the revenue security solution and the set-top box SoC. Swisscom knew that this innovative approach to content delivery would also require a strong best-of-breed vendor ecosystem.

Swisscom selected the Verimatrix Video Content Authority System (VCAS™) for IPTV to protect the broad range of linear TV delivered over UDP to set-top boxes on the new platform. Verimatrix worked closely with Marvell to implement an advanced security integration into the chipset hardware and software. This included integration into the native TV players that are part of the Marvell SDK.

The performance of trick-play functions like rewind and fast-forward was another important consideration and Swisscom has achieved a user experience that is considered the equal of what you would expect using a local hard disk. This is credited to the effectiveness of the Verimatrix and Marvell integration.



Swisscom selected Verimatrix because of its proven ability to protect even the largest, most popular offerings. VCAS for IPTV is the market leading pay-TV security solution (ranked No.1 globally in IPTV content protection and DRM for seven years running by the market research firm SNL Kagan) and it fully exploits the power of two-way broadband infrastructure to provide the highest levels of digital TV security.

“Swisscom is committed to providing our subscribers with convenient access to services they crave, on the device of their choice, any time. We chose to upgrade our revenue security solution to VCAS because its capabilities clearly align with this commitment,” says Dietzel. “VCAS for IPTV also gives us the flexibility to satisfy future customer demand beyond our managed network to any kind of mobile device, while seamlessly protecting our existing network configuration.”


VCAS for IPTV can support linear and on-demand content across multiple network types and has been designed for a multi-DRM universe. The MultiRights™ component within VCAS means the native DRM systems needed to support different CE devices can be supported within a unified security umbrella so that content consumption rights are consistent and transparent between devices.

At present, on-demand content on Swisscom TV 2.0 is delivered using Smooth Streaming adaptive bitrate video and is protected by PlayReady DRM. For multi-screen linear viewing, free-to-air channels are currently available to viewers and are not encrypted.

Swisscom also needed a security partner that could help drive its ambition to create an innovative and secure IPTV platform. Verimatrix had the right heritage of broad middleware interoperability to ensure rapid integration with the Android-based platform, and

Dietzel was very pleased with the outcome. “The DRM is well integrated in the Live TV player from the Marvell SDK. Verimatrix was a big help integrating the security standards in the deeper Android layer, working together with Marvell. Verimatrix and Marvell did a great job.”

He also praises the support and competence of the Verimatrix team, including their knowledge of set-top boxes and how to security-harden them, based on experience with many different pay-TV operators and set-top manufacturers. Verimatrix was deeply involved in the hardware design and software reviews for Swisscom TV 2.0 and oversaw the acceptance of the hardware.



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A FUTURE-FACING TELEVISION ARCHITECTURE, AND NEXT STEPS

Swisscom is a network DVR pioneer and makes use of a specially architected ultra-fast caching system combined with internal memory on the set-top. Live-pause, rewind and start-over functions can be accommodated on the internal memory, with up to an hour of time-shifting before the set-top needs to access the network recording. The most recent content on the most popular channels (covering the past 30 hours) is then cached and delivered from streaming servers designed to stream a high number of unicast sessions simultaneously.

The legacy platform (Swisscom TV 1.0) and the new Swisscom TV 2.0 platforms share the same head-end and video-on-demand ingest workflows, but have different content ingest points for linear television.

Swisscom has already virtualized its backend functions for TV 2.0 on a private cloud running HP hardware, including content security using VCAS for Internet TV.

CONCLUSION

Swisscom TV 2.0 provides an example of what a future-facing IP and software centric pay-TV architecture can look like and illustrates how flexible operators need to be, working with parallel systems and combining multiple networks within a unifying user experience. Within this framework, Swisscom has achieved a smooth upgrade from a first generation IPTV system to a highly competitive multi-network and multi-screen service.

The use of Android for the first screen on a television service with more than 1.17 million subscribers is a notable industry development. Swisscom has demonstrated how a best-of-breed platform can be implemented using an Android-based, hybrid adaptive streaming/multicast approach with the highest levels of content security, ensuring immediate access to the best content. The company has also given itself the flexibility to introduce a unified security architecture covering multiple devices and DRMs beyond the managed network.

While all this technology may be invisible to Swisscom customers, the improved user experience has been widely recognized and means Swisscom can continue its rapid progress as a “challenger” TV service. The company has again demonstrated its willingness to take bold decisions and lay claim to the role of innovator in a dynamic and competitive marketplace.





ABOUT SWISSCOM

Swisscom is Switzerland's leading telecom provider with its headquarters in Ittigen, close to the capital city, Berne. With over 20,000 employees it generated turnover of CHF 5.7 billion in the first half-year of 2014. Swisscom is one of the most sustainable companies in Switzerland and Europe.

ABOUT VERIMATRIX

Verimatrix specializes in securing and enhancing revenue for multi-network, multi-screen digital TV services around the globe. The award-winning and independently audited Verimatrix Video Content Authority System (VCAS™) and ViewRight® solutions enable cable, satellite, terrestrial, IPTV and OTT operators to cost-effectively extend their networks and enable new business models. As the established leader in cardless security solutions, the company has leveraged its innovative 3-Dimensional Security approach to provide harmonized rights for premium content delivery to a range of devices over new hybrid network combinations.

Maintaining close relationships with major studios, broadcasters, standards organizations and its unmatched partner ecosystem enables Verimatrix to provide a unique perspective on video business issues beyond content security as operators introduce new services to take advantage of the proliferation of connected devices. Verimatrix is an ISO 9001:2008 certified company.

CONNECT

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