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RESEARCH ARTICLE

Implementing Software IPTV with WOWZA Server

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Abstract— Internet Protocol Television (IPTV) is gaining recognition as a successful alternative for delivery of the video by telecommunication and cable companies. IPTV features bandwidth efficiencies and management; therefore, it is ideally suited for broadcast and multimedia services. IPTV offers the ability to stream the media in smaller batches, directly from the source. There are a number of basic problems that afflict video streaming; it provides no guarantees on bandwidth, delay jitter, or loss rate.

Therefore, a key goal of video streaming is to design a system to reliably deliver high-quality video over the internet and to accommodate different devices that had made complicated for the streaming workflow. In this project by "Implementing Software IPTV with WOWZA Server" we simplify the process with one server and one transcoder.

To deliver streams to different players, browsers and devices we traditionally need separate encoders and servers which can take pretty big capital investment. And for live video which mean greater bandwidth and for a video which mean more file storage devices need more bit rate in codec and need more no of transcoder.

Wowza Media Server is robust, customizable, and scalable server software that powers reliable streaming of high-quality video and audio to any device, anywhere. Wowza Media server accepts any video format and reliably delivers it in multiple formats and with the highest possible quality. Wowza Media server software integrates with third-party systems. We need a software or hardware encoder to push one HD stream to Wowza stream engine.

We use a software encoder Wirecast, is a live video streaming product, works like a video switcher, controlling real-time switching between multiple live video cameras, while dynamically mixing in other source media to create professional broadcast productions on web.

In this project, we combined the Wowza media server with software transcoder Wirecast, and we have provided a new approach to video encoding that streamlines the workflows for multiple screen delivery using standard video. And explained by developing a website sunitv.in, how the combined solution is changing the conventional paradigm by creating an operationally efficient, cost-effective, and unified multiple screen encoding and streaming model.

Use any software or hardware encoder to push one HD stream to Wowza stream engine. The Wirecast transcoder creates a different quality of video and into different steaming formats.

In addition, we developed a security for a website sunitv.in by providing a username and password to the content that will be protected and confidence that the streaming will be success.

"Implementing software IPTV with Wowza server" provides a solution with Wowza streaming engine, which simplifies the process with one server and one transcoder.

Keywords— IPTV, Wowza Server, simplify with one server and one transcoder, Wirecast, streamlines, sunitv.in

I. INTRODUCTION

IPTV is a system through which television services are delivered using the Internet Protocol (IP) that enables a more customized and interactive user experience. Among other things, IPTV could allow people who were separated geographically to watch a movie together, while also chatting and exchange files simultaneously; IPTV is the delivery of programming by video stream encoded as a series of IP packets. Instead of being delivered through traditional terrestrial, satellite signal and cable television formats. IPTV offers the ability to stream the media in smaller batches, directly from the source.

As a result the client media player can be playing the data (movie) before the entire file has been transmitted. This is known as streaming media. Streaming is a method of serving or delivering, video and audio content over the internet.

As the broadband availability has increased and compression standards have become more efficient, streaming has become a hugely popular way to publish high-quality live video. The need to accommodate different devices has made complicate for the streaming workflow.

How can deliver the best quality video by providing streams of different quality for different devices?

The encoders create multiple versions for the video and those streams are delivered to the server or stored in storage for later on demand playback, and based on the server bandwidth it provides the quality of the video. So to deliver stream to different players, browsers and devices, traditionally need separate encoders and servers which can take pretty big capital investment. For live video which mean greater bandwidth and for video on demand which mean more storage devices need more bit rate in codec and need more transcoder.

In "Implementing software IPTV with Wowza server" project we provide a solution with Wowza streaming engine, which simplifies the process with one server and one transcoder.

Use any software or hardware encoder to push one HD stream to Wowza stream engine. The Wirecast transcoder creates a different quality of video and into different steaming formats.

Wirecast is a live video streaming product, works like a video switcher, controlling real-time switching between multiple live video cameras, while dynamically mixing in other source media to create professional broadcast productions on web. Wirecast make it possible to get video content to any audience regardless of how it is created, distributed, or viewed. Throughout the entire media lifecycle, from capture to viewing, for consumers through high-end professionals, Wirecast encoding applications to fully automated workflow systems

Wowza media server is used for streaming of live video, audio over IP networks to desktop, laptop, and tablet computer, mobile devices. Wowza media server can stream to multiple types of playback clients and devices simultaneously.

In this project, we combined the Wowza media server with software transcoder Wirecast, and we have provided a new approach to video encoding that streamlines the workflows for multiple screen delivery using standard video. And explained how the combined solution is changing the conventional paradigm by creating an operationally efficient, cost-effective, and unified multiple screen encoding and streaming model.

In addition, we developed a security by providing a username and password to the content that will be protected and confidence that the streaming will be success.

So you can give your viewers a rich video experience on any device.

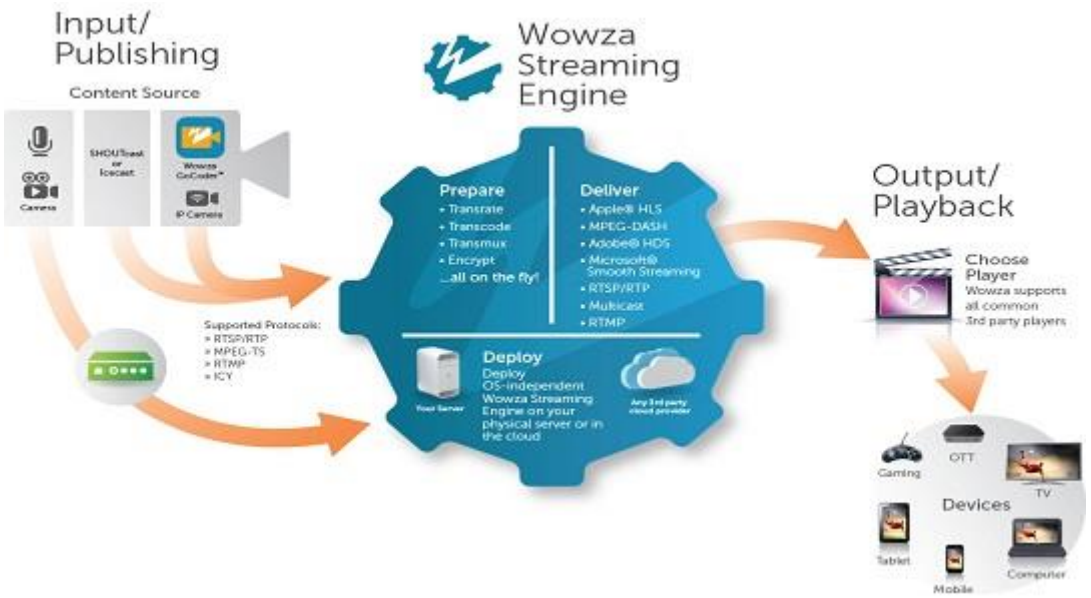

Fig 1 Wowza streaming Engine

II. RELATED WORK

With today's rapidly growing demand for live video consumption; users want the ability to view wherever they are – in their homes, on the desktop. But the workflow needed to provide delivery to multiple screens over IP networks – including Flash players on personal computers, iPhones and other mobile devices. The issues are many and complex, including different transport networks and protocols, a multitude of streaming servers specific to each player and device, varying bandwidths and more.

Unfortunately, there is no consistent video streaming protocol standard across the various desktop clients, mobile devices on market today. Video content producers must now encode and deliver video separately for each destination screen.

Separate Encoders and networks required for each Destination: While most devices and screens are converging on a common video encoding format (H.264), they differ in how that video is transported from the encoder through the distribution server to the screen (iPhone, computer player, etc). Currently, formatting the same live event for delivery to multiple screens requires separate encoders and transport protocol for each destination.

iPhones; the encoder delivers an MPEG-2 Transport stream over IP containing H.264 video to the server. The encoder segments the stream into a series of short files. These files are delivered via HTTP along with an MP3 player. Computer which requires a flash player, a flash media server delivery network "reflects" encoder streams over a proprietary streaming protocol (RTMP) connection to viewer's desktop flash player.

In existing systems, delivering video to multiple screens are complex, inefficient, and expensive for both video producers and service providers, and will not scale with the exploding demand for video content. As a result, difficult choices have to be made huge investment for company, more work, lot of maintenance, affecting the scope of distribution of the live video, severely limiting potential revenue and visibility for the video content.

Clearly, a new model that can scale ip and simplify the encoding and delivery workflow to multiple screens – without overwhelming production and network resources as well as budgets – is required.

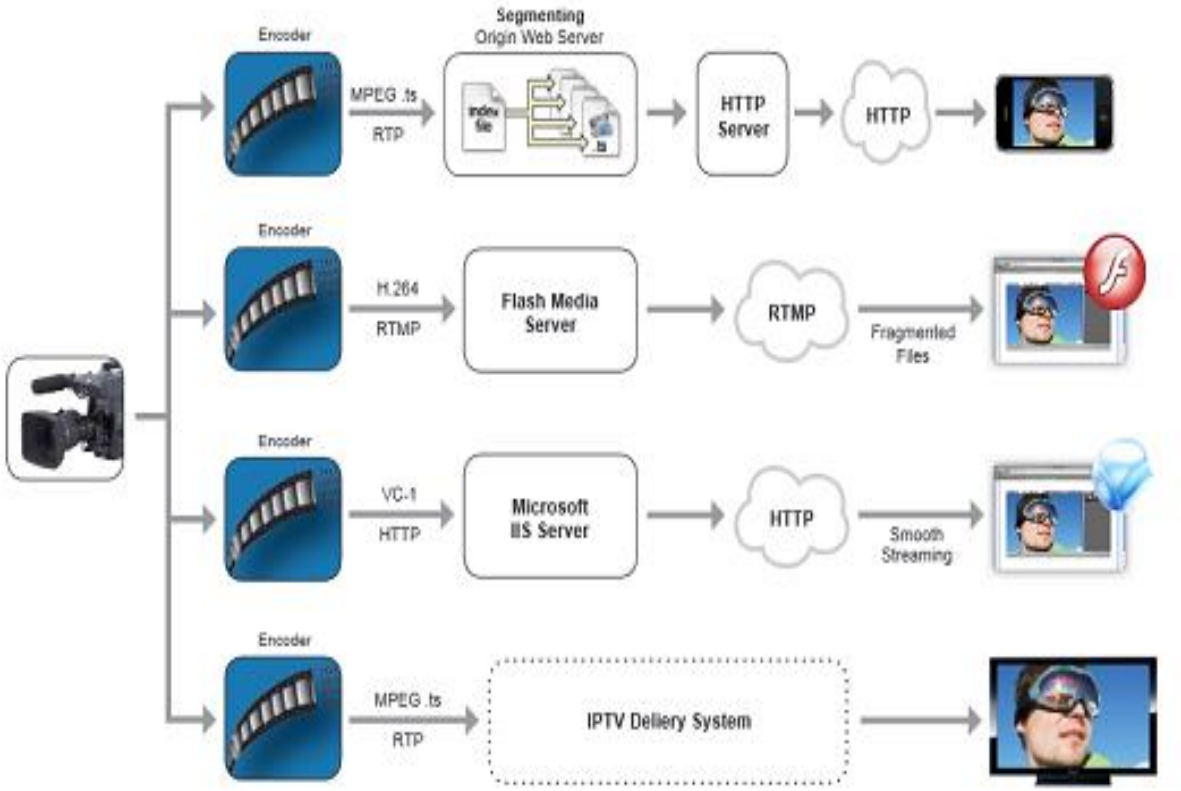

Fig 2 Delivering video to multiple screens requires separate encoding/delivery workflows for each destination.

III. IMPLEMENTING SOFTWARE IPTV WITH WOWZA SERVER

Now there is an easy and affordable new solution that eliminates the need for separate encoder and networks for delivering live video to multiple screens. Wirecast live video production software works in conjunction with Wowza Media Server, the first multiprotocol platform that provides simultaneous media streaming to iPhone, Flash. This solution makes it possible to live stream to multiple destinations from a single platform.

In contrast to the conventional approach to streaming live video to multiple screens, the Wirecast-Wowza model requires just a single encoder and media server delivery network, resulting in just one workflow.

This is possible because Wowza Media server provides delivery protocol conversion and segmentation if required, for HTTP streaming to the clients.

Different screens require different resolutions (bitrates and size) on the stream, in order to optimize the viewing experience with regards to picture quality. Wirecast has the ability to simultaneously produce several different resolution and stream these live to the streaming server. Wowza Media Server will combine these streams and deliver the appropriate resolution, over the required network, in the right format, to each screen.

In the present system we are using a Linux as an operating system, since Linux is secure, uptime when compared to windows, as so many resource need to be used for windows.

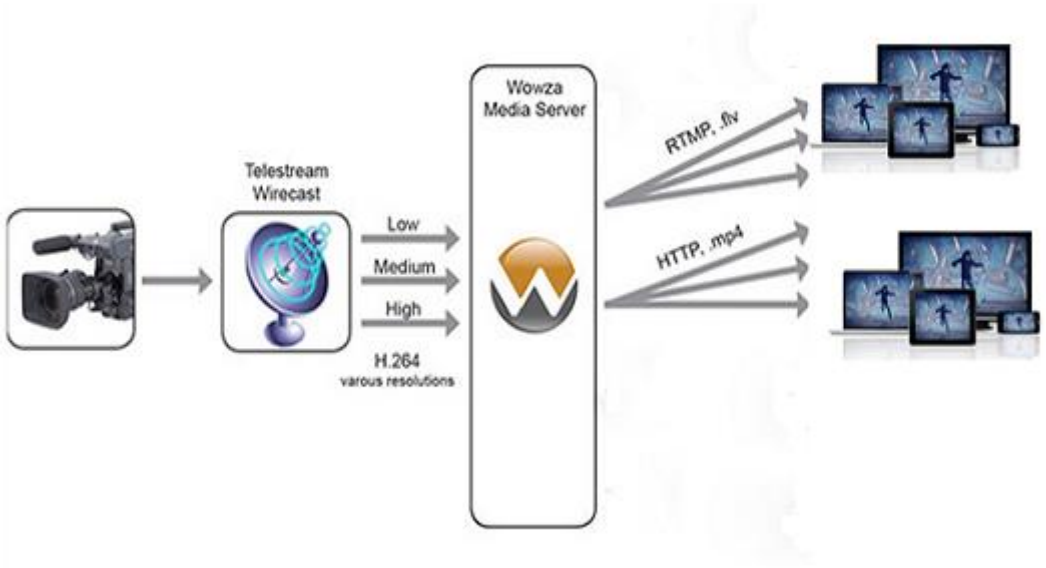

Fig 3 Single encoding/delivery workflow with Wirecast and Wowza Media enables simultaneous delivery to multiple clients and devices.

A. Features and Benefits of the Wirecast and Wowza

1) For Producers: Minimizing the number of encoders reduces cost and complexity for the producers and increases consistency of the content delivered to the screen. Requires less bandwidth to send streams to the content delivered network, enabling the producers to deliver content quickly and easily in areas with limited connectivity.

2) For Content Delivery Networks: Provides a much lower Total cost of Ownership with just one network to architect, manage, and operate.

3) *For Consumers:* Gives consumers a choice to view video on any screen, any device, wherever and whenever they want access, provides a consistent viewing experience across different devices (mobile phones, Flash players etc).

4) Content Security: Wowza Streaming offers a wide variety os simultaneous security options to ensure that streams, networks, and audio and video assets are protected.

IV. CONCLUSIONS

This project opens a way for many uses for both professionals and individuals: live telecasting of events, web TV, broadcasting performance and concerts, webcasts, training and courses, government concerns, virtual conference, health in real time and many more can be visualized on internet.

This project has successfully implemented the Wirecast live production application and multi-protocol streaming by Wowza Server, it is accomplished easily and cost effectively, enabling producers to reach Flash players, and other screens with just one encode delivered on a unified server infrastructure.

Now, video streamers have an affordable and efficient way to create and distribute professional looking live video to audiences anywhere and anytime –without having to worry about screen they use to consume it.

The best feature of this project is no website in India is using the Wowza Media Server for video streaming and this project has showed it with implementation.

Hence, designed a website sunitv.in; as a mode of communication. With the best features that **sunitv.in** could accomplish, like can telecast live marriages, live education, create own channel, ensconce business, live media bands, webinars, a place to entertain yourself etc.

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