High Density
Real-time Streaming Solutions

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Ben Mesander – VP of Engineering, Wowza Media Systems

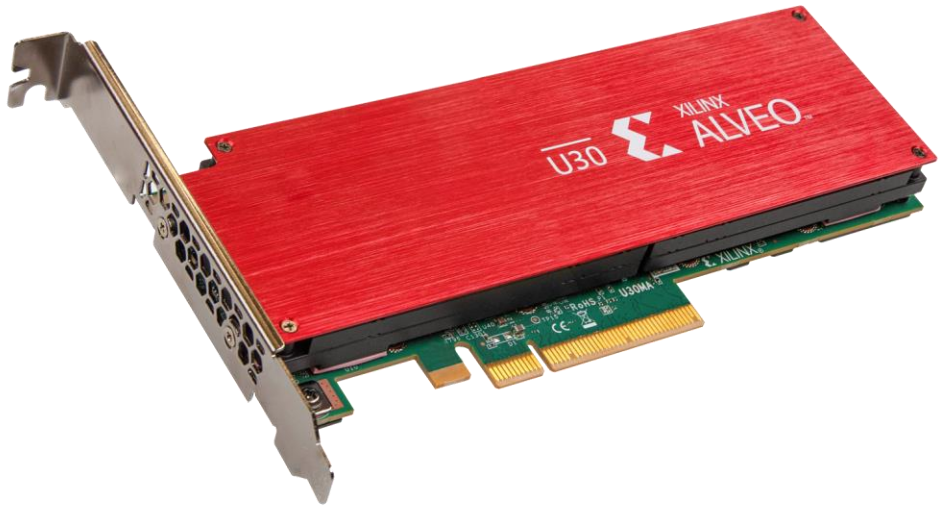
Agenda

1. Introduction to Xilinx high density transcoding solution (~10mins) - Sean
2. Overview of Wowza streaming engine (~15mins) – Ben
3. Summary (~5mins) - Sean

Xilinx + Wowza

WOWZA™ media systems

- Reliability
- Ease of use
- Security



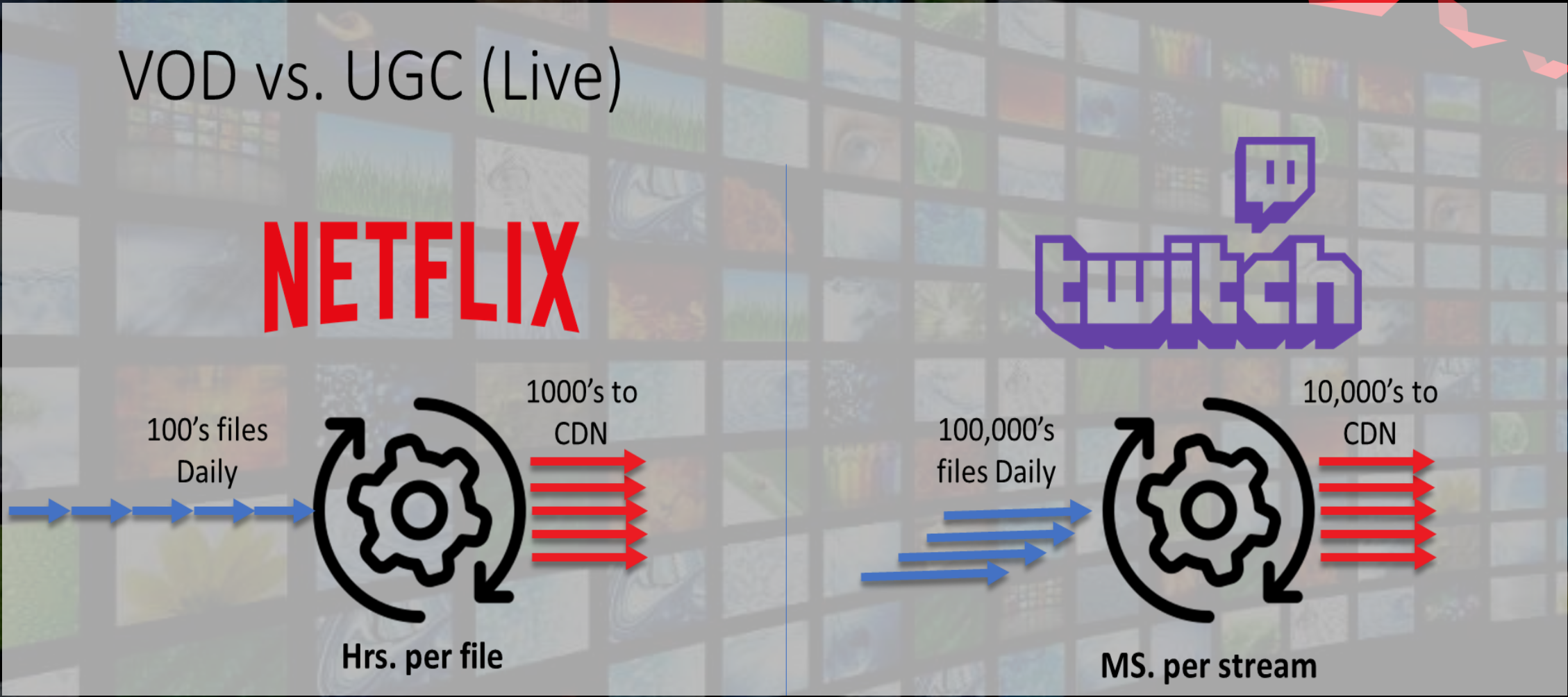
- High density
- Ease of scale
- Low power

Content creators can deploy fast, and scale effortlessly, with ironclad reliability and security

XILINX

Xilinx High Density Video Transcoding Solution

Live Applications Are More Expensive



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U30 Live Video Streaming Applications

Live Sports Betting

Live Streaming

Game Streaming

Cloud Gaming

Interactive Streaming

Social Media Streaming

XILINX ALVEO

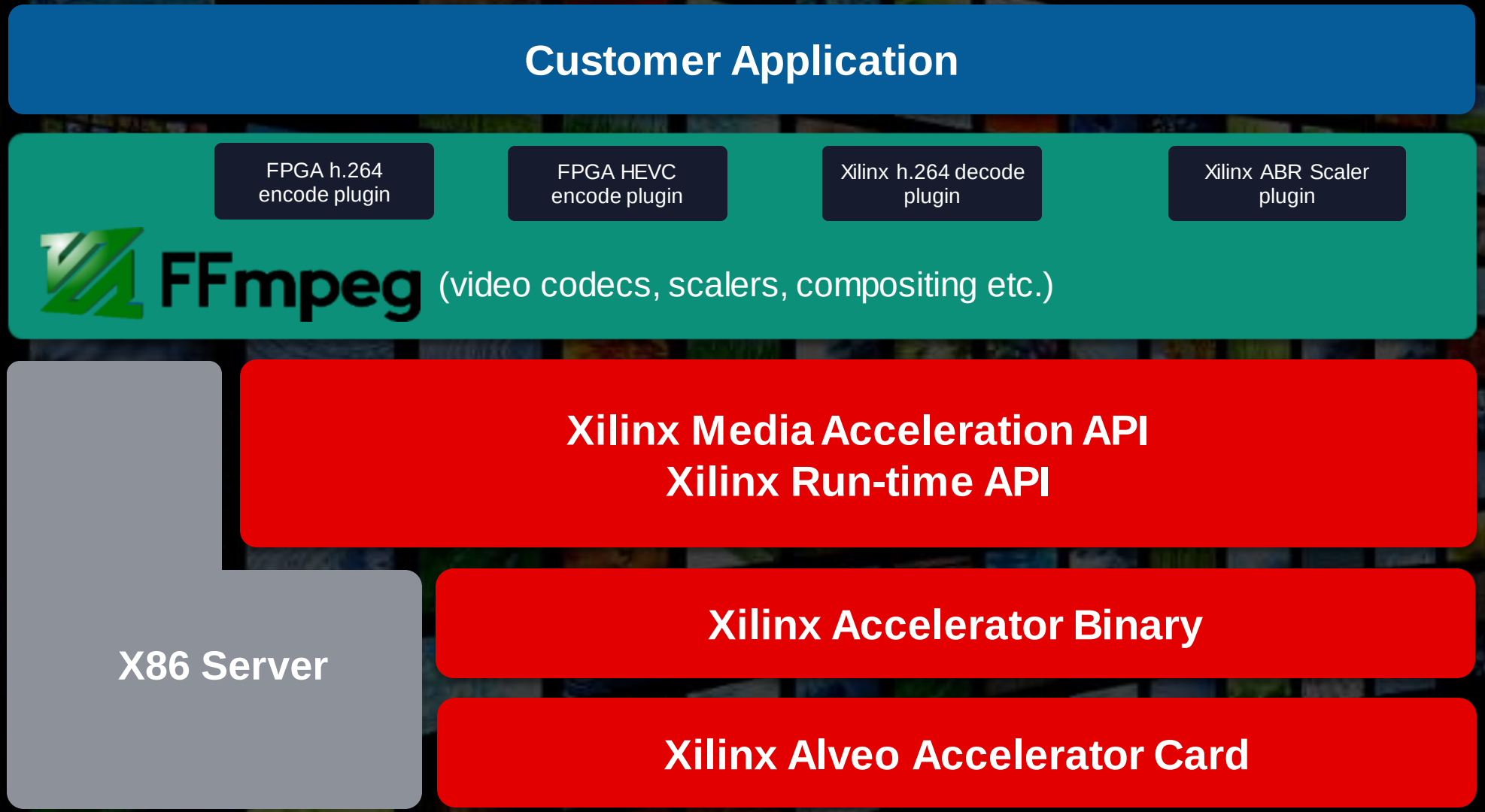
XILINX

U30 High Density Video Transcoding Solution

- High density media processing
  - **Half Height / Half Length, Single Slot**
- Supports:
  - **2 x 4kp60** simultaneous transcodes per card
  - **8 x 1080p60** simultaneous transcodes per card
  - **16 x 1080p30** simultaneous transcodes per card
  - **36 x 720p30** simultaneous transcodes per card
- Support for both H.264 & HEVC
- HDR and 10bit support (future)
- Support for low latency transcoding
- Low power solution **25W**

XILINX ALVEO™

Xilinx FFmpeg Integration



XILINX

No FPGA Experience Needed, BUT….

```
ffmpeg \
-f rawvideo -pix_fmt yuv420p -s:v 1920x1080 -r 30 -an -i
/home/ffmpeg/VU9P/TestSequences/Kimono1_1920x1080_24.yuv  \
-frames 240 -c:v libx264 -preset medium -profile:v high -crf 23 -bf 4 -refs 3 -g 30 -b:v 4000k -maxrate 4000k -bufsize
8000k -f h264 -r 30 -y ./sw_outdir/x264_medium_out0_br4000k.h264
```

```
$ ffmpeg \
-f rawvideo -pix_fmt yuv420p -s:v 1920x1080 -r 30 -an -i
/home/ffmpeg/VU9P/TestSequences/Kimono1_1920x1080_24.yuv  \
-frames 240 -b:v 4000k -g 30 -c:v xlnx_h264_enc-hq -f h264 -y ./hw_outdir/out0_br4000k.h264
```

```
$ ffmpeg \
-f rawvideo -pix_fmt yuv420p -s:v 1920x1080 -r 30 -an -i
/home/ffmpeg/VU9P/TestSequences/Kimono1_1920x1080_24.yuv  \
-frames 240 -b:v 4000k -g 30  c:v xlnx_HEVC_enc  -f h265 -y ./hw_outdir/out1_br4000k.h264
```

> **As simple as changing 20 characters to get acceleration**

https://trac.ffmpeg.org/wiki/EncodingForStreamingSites

WOWZA media systems

Wowza – Streaming Engine

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WOWZA™ media systems

The live video streaming platform for business-critical applications.

Rock-Solid Reliability

Streaming to any device, anywhere, at any scale — in an instant.

Low Latency

Lightening-fast video delivery when it matter most.

Bulletproof Security

Protection at every step of your workflow.

WOWZA™ media systems

35,000+
LIVE-STREAMING IMPLEMENTATIONS

170+
COUNTRIES

23+ MILLION
TRANSCODING HOURS PER MONTH

Wowza Puts the Stream in Mainstream

SONY SPACEX NASA facebook NBC UNIVERSAL UNIVERSITY OF OREGON Turner

Capterra ★★★★½

Founded 2005!

WOWZA™ media systems

Wowza Streaming Engine

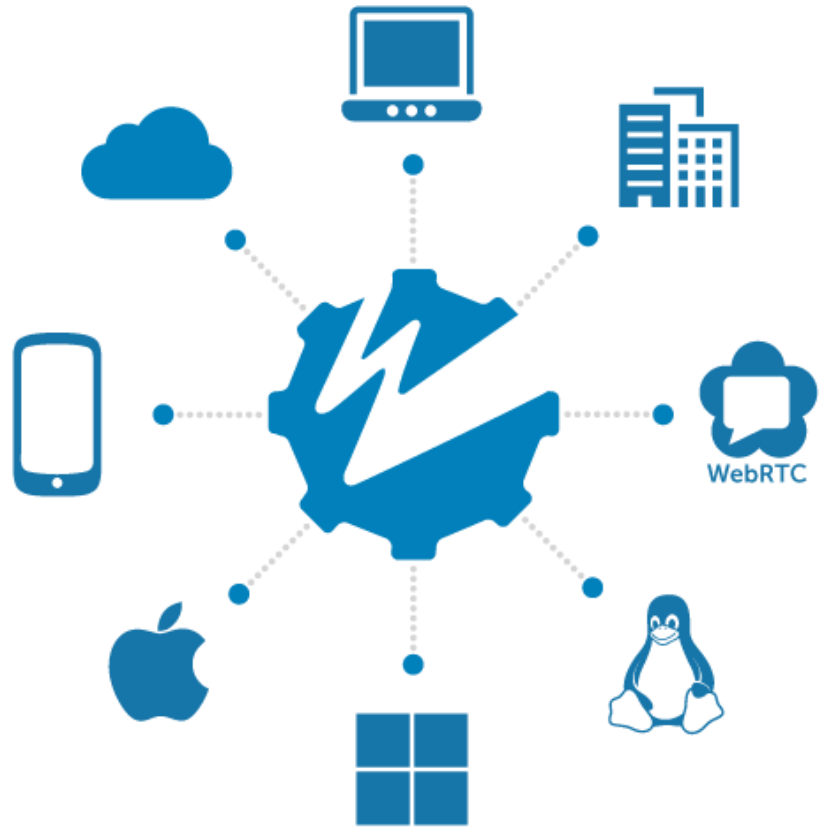
POWERING CONNECTIONS TO ENGAGE YOUR WORLD.
The solution you can start with, the partner you can scale with.

Ingest Any Live Stream and Deliver to Any Device

- Ingest streams from any encoder.
- Create live, linear, or on-demand streaming applications.
- Stream live events, video conferencing, audio streaming, 24/7 streaming and more.
- Deliver video and audio streams to any player or device.

Transcode for Optimal Viewer Experiences

- Refine your live streaming workflow.
- Deliver the highest quality streams.



WOWZA media systems

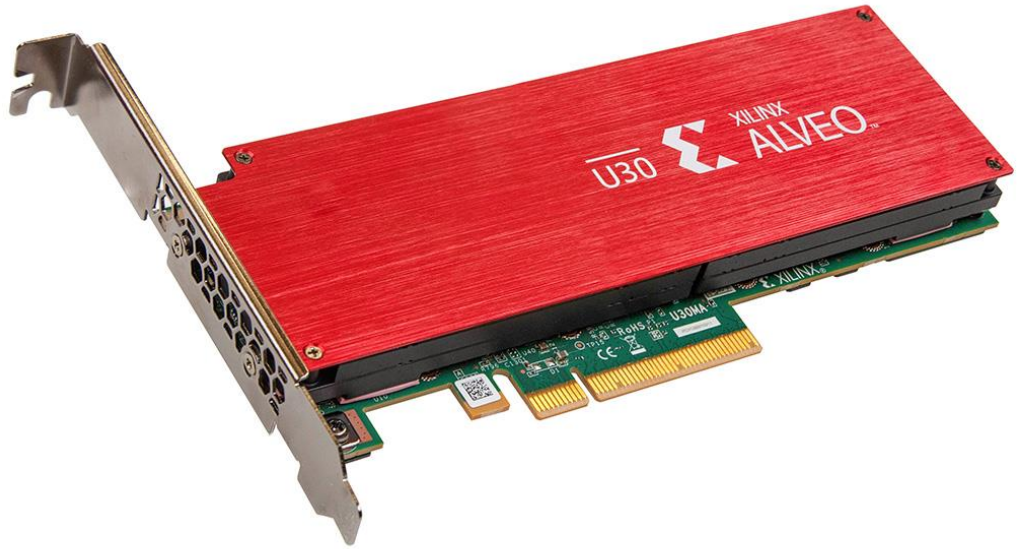
WSE + Xilinx Alveo U30

Wowza Streaming Engine +

Xilinx Alveo U30 accelerator cards =

A great solution for:

- Large scale streaming of user generated content
- High density / low power transcode combined with Wowza API allows for OEM customization
- Market segments such as CDNs which require ease of management of large numbers of transcoded streams



Growing Video & Imaging IP Ecosystem

+

WOWZA
STREAMING
ENGINE

=

PRODUCTIVITY

TTM

XILINX.

Growing Video & Imaging IP Ecosystem

socionext

Nextera Video

BLUEDOT

V-NOVA

DEEPOLY

IBEX

AV1

JPEG-XS

Super Resolution

Video Mixer

Apple ProRes

HEIF

LCEVC

XILINX

Thank You