

# Virtual Video Transcoding in the Cloud



Dell World, 2014

Kim Crawford



Based on a white paper  
co-written by Intel, Dell and Artesyn



# Artesyn - Who We Are?

*The Global Leader in Power Conversion and Embedded Computing Technologies*

Founded in  
**1971**

Headquartered in  
**Tempe, AZ**

**\$1.2B** Revenue  
in 2013

**~20,000**  
Employees

The **Largest** Installed  
Base of ATCA Blades  
and Systems in the World

**#1 World Leader** In OEM Embedded Power

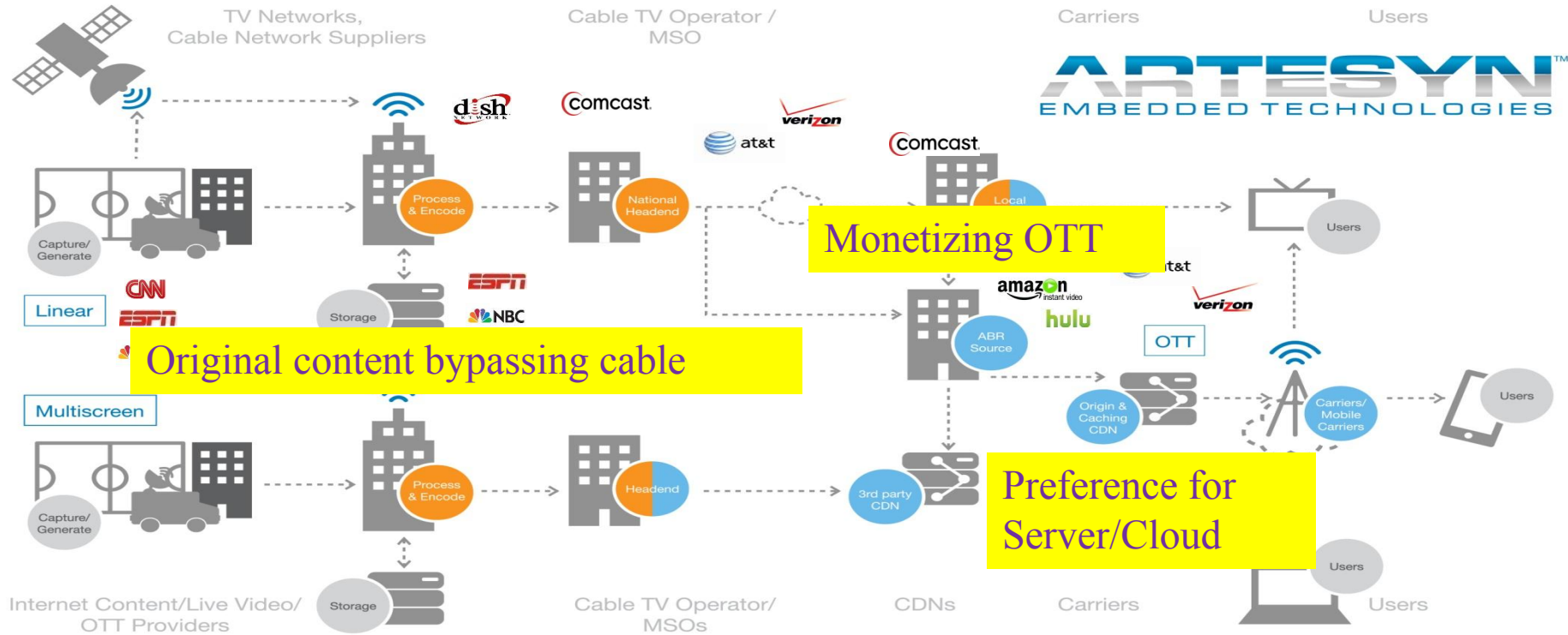


**Advanced TCA®**



# What's Driving CAPEX Investment?

\$2.8B market in 2015



Original content bypassing cable

Monetizing OTT

Preference for Server/Cloud

On-demand strains bandwidth

Higher resolutions

Multiscreen

● High Quality Video Transcoding    ● High Density Video Transcoding

# Responding to Critical Market Need



- The Growing Need to Convert from One Video Compression to Another – “**Transcoding**” with multiple formats and end points
- **Channel density capability to accommodate multiplatform** (traditional and multiscreen), large scale distribution at **higher resolutions**
- With the shift to IP and cloud deployment, growing preference by operators for standard **server-based** broadcast solutions (**no dedicated hardware**)

## Application Example



# Challenges of Today's Network

- **Service providers prefer using standard servers** vs. dedicated hardware for video encoding/transcoding
- Standard Servers with **software-based video processing solutions don't scale** well to support higher densities, and become costly
- **Network demand for video encoding/transcoding is rising as user habits change**



Single server capacity:  
6 streams (1080p30 AVC transcodes)

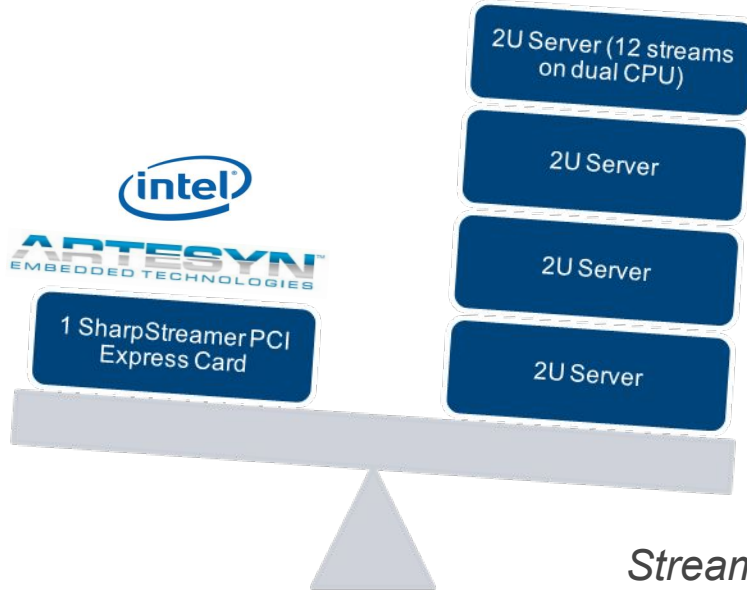


# 1 Add-on Card Can Deliver 8X the Density of 1 Server

Intel GPU-acceleration multiplies density

48 Video Transcodes

48 Video Transcodes



# SharpStreamer™

TV Networks,  
Cable Network Suppliers

Cable TV Operator /  
MSOs

Carriers

Users



High Density  
Video  
Transcoding



Linear/OTT Multiscreen

**Processor: Intel i7+GPU**  
**Form Factor: PCIE ¾ Length**  
**Designed for use with Artesyn & Dell Servers**



**Application Fit: OTT Streaming, Mobile Network  
Optimization, CDN, Secondary Distribution**



## Representative Performance

# of 1080P30 Transcode Channels

# of SharpStreamer (s)	1	2	4	6	16
H.264 (AVC)	48	96	192	288	768
HEVC	4	8	16	24	64



Internet Content/Live Video/  
OTT Providers

Cable TV Operator/  
MSOs

CDNs

Carriers

Users



# CAPEX & OPEX Impact

*Stacked Servers vs. SharpStreamer™*

## Next-day TV OTT Content Transcoding

- Processing 200 hours of content in 10 different formats
- CAPEX Trade-off:
  - Requires 24 servers without acceleration
  - Requires only 1 with 4 SharpStreamers accelerated
- OPEX Trade-off:
  - Requires 11,405W – estimated \$9,991 power costs/year without acceleration
  - Requires only 1056W – estimated \$925 power costs/year with SharpStreamer acceleration

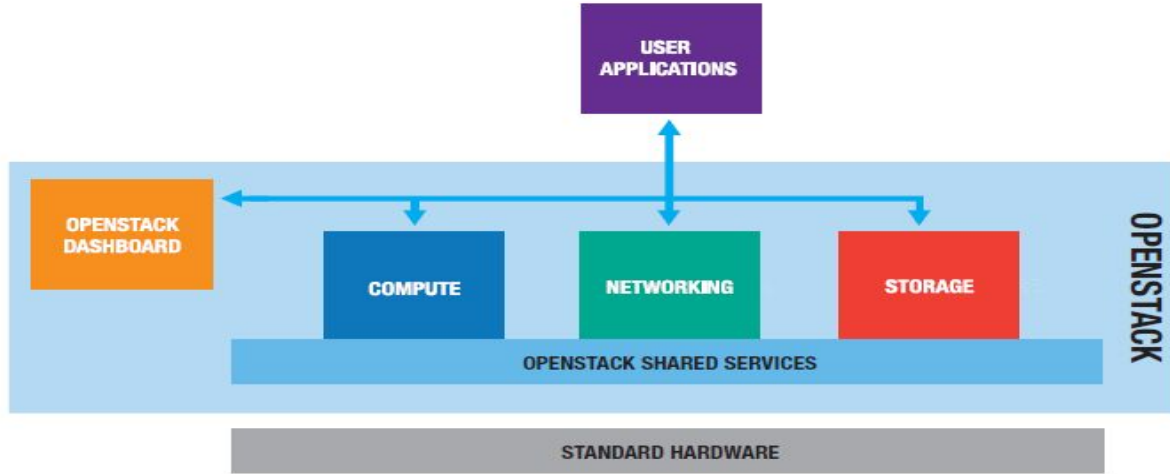
## Real-time Broadcast ABR Transcoding

- Processing 96 1080p streams in multiple formats
- CAPEX Trade-off:
  - Requires 16 servers without acceleration
  - Requires only 1 with 4 SharpStreamers accelerated
- OPEX Trade-off:
  - Requires 7,604W – estimated \$6,661 power costs/year without acceleration
  - Requires only 1056W – estimated \$925 power costs/year with SharpStreamer acceleration

Source: "Video Transcoding in the Cloud," a white paper co-written by Artesyn, Intel and Dell released September 12, 2014



# Cloud Provisioning & Management through OpenStack



## OpenStack and What It Enables

OpenStack is an open source cloud computing platform, which has seen unprecedented growth and support for implementing Infrastructure as a Service (IaaS).

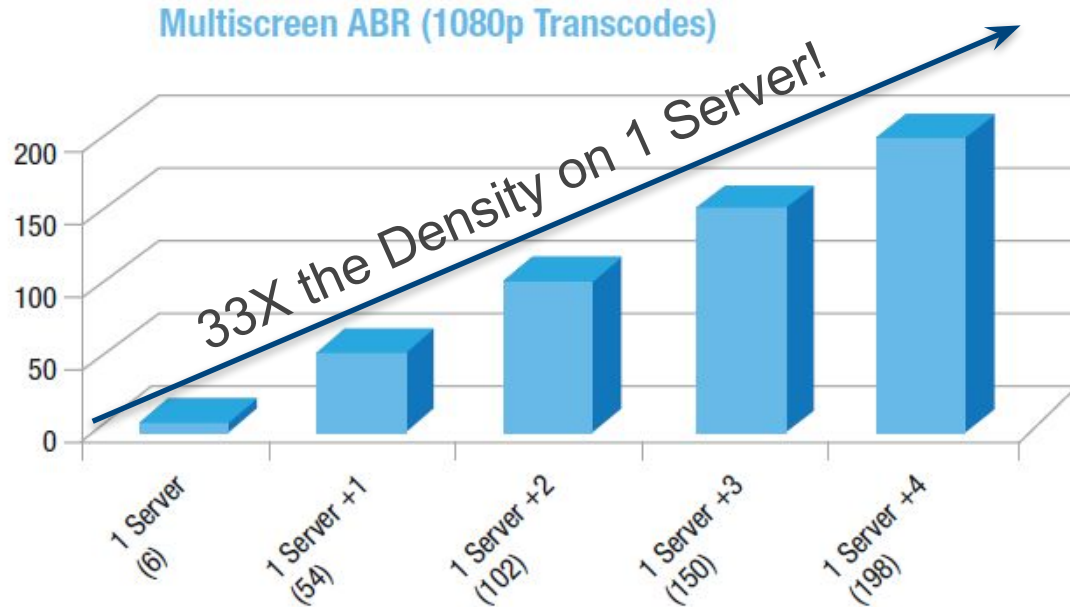


OpenStack-based  
Vantrix Transcoding  
Demo Featured at  
IBC 2014



# Benefits

- Reduced Capital Equipment Spending
- Power Savings and Reduced Overhead Cost
- Scalability:



- Ease of Use through Ubiquity of x86-based processing in the Cloud

# Thank You!