# Transform Your IP Camera Video Feed into a High quality 24/7 Live Streaming Solution

Ryan Jespersen
Training Manager
Wowza Media Systems

# Agenda

In this session you will learn how to:

- Connect your IP camera to Wowza Streaming Engine™

- Optimize your live feed IP camera streaming

- Record your incoming stream

- Use Wowza Transcoder AddOn to handle non-H.264 IP cameras and to create single or adaptive bitrate H.264 streams for any screen

- Enable Wowza nDVR AddOn for network Digital Video Recorder features such as pause, play and rewind on a live broadcast

- Protect your content by encrypting incoming and outgoing streams

WOWZA
media systems

# Who Uses Wowza?

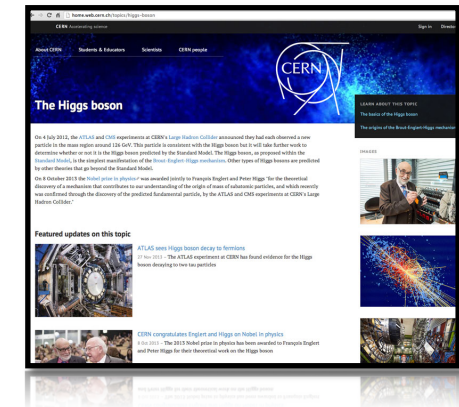### Resorts
(Hotels, Tourism)
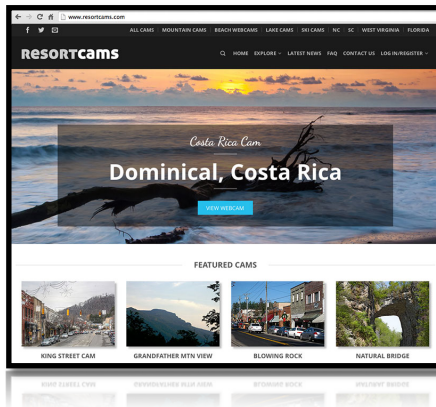


### Public Safety
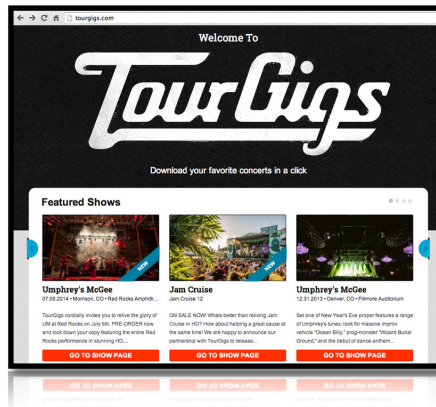(Facilities, Banks, Police, Borders)
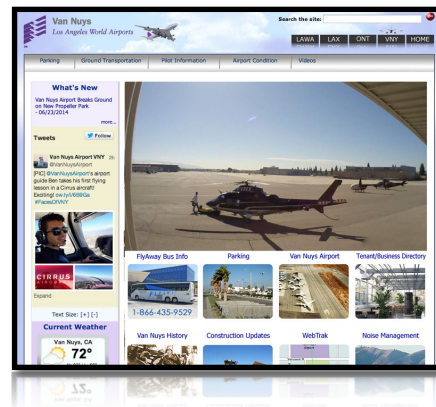


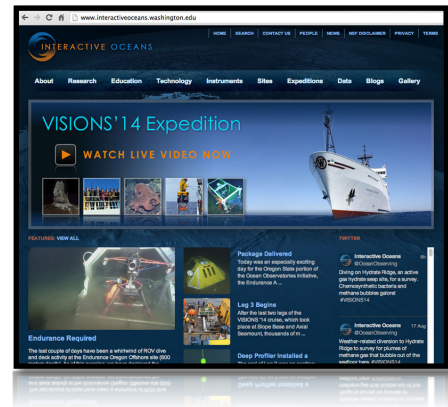### Transportation
(Roads, Public Transit)



### Webcasting
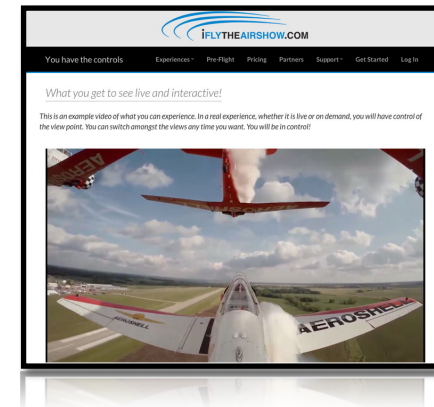(Enterprise, Churches, Government)



### Entertainment
(Sports, Concerts)



### Education / Distance Learning
(K-12 – University)



### Events / Local Hotspots
(Shows, Bars, Restaurants)



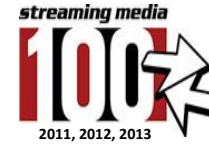### Animals / Nature
(Zoos / Pet Daycare)



WOWZA
media systems

# WOWZA MEDIA SYSTEMS

# Wowza Media Systems

- Simplifying the complexities of video and audio streaming

- In business since 2005

- Customers in 150+ countries

- Wowza Streaming Engine™: award-winning software

# Wowza Streaming Engine™

- Robust, customizable, and scalable server software that powers reliable streaming of high-quality audio and video to any device anywhere

- Scale across operating systems and architectures

- From start-up websites to mission critical applications

# Input/Publishing

## Content Source

- Camera
- Video on Demand
- Internet Radio
- Wowza GoCoder™
- IP Camera

Encoder

Supported Protocols:
» RTSP/RTP
» MPEG-TS
» RTMP
» ICY
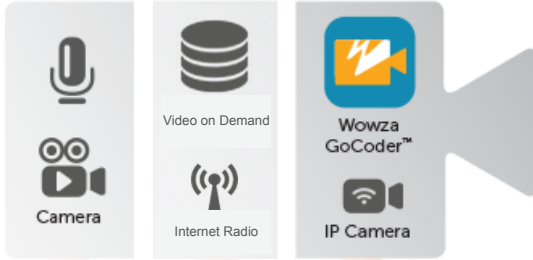
# Wowza Streaming Engine

## Prepare
- Transrate
- Transcode
- Transmux
- Encrypt

...all on the fly!

## Deliver
- Apple® HLS
- MPEG-DASH
- Adobe® HDS
- Microsoft® Smooth Streaming
- RTSP/RTP
- Multicast
- RTMP

## Deploy

Your Server

Deploy OS-independent Wowza Streaming Engine on your physical server or in the cloud

Any 3rd party cloud provider

# Output/Playback

## Choose Player
Wowza supports all common 3rd party players

## Devices
- Gaming
- OTT
- TV
- Tablet
- Mobile
- Computer

## Key Capabilities

- Multi-format Streaming
- Live Adaptive bitrate streaming up to 1080P
- Live stream recording & archiving
- Closed caption
- High-quality video streaming (across all devices)
- Security/content protection
- Extensive APIs
- Browser-based manager

## Extended Features

- Transcoder AddOn
- nDVR AddOn
- DRM AddOn

WOWZA
media systems

# IP CAMERA WORKFLOW

# IP Camera Workflow with Wowza Streaming Engine™
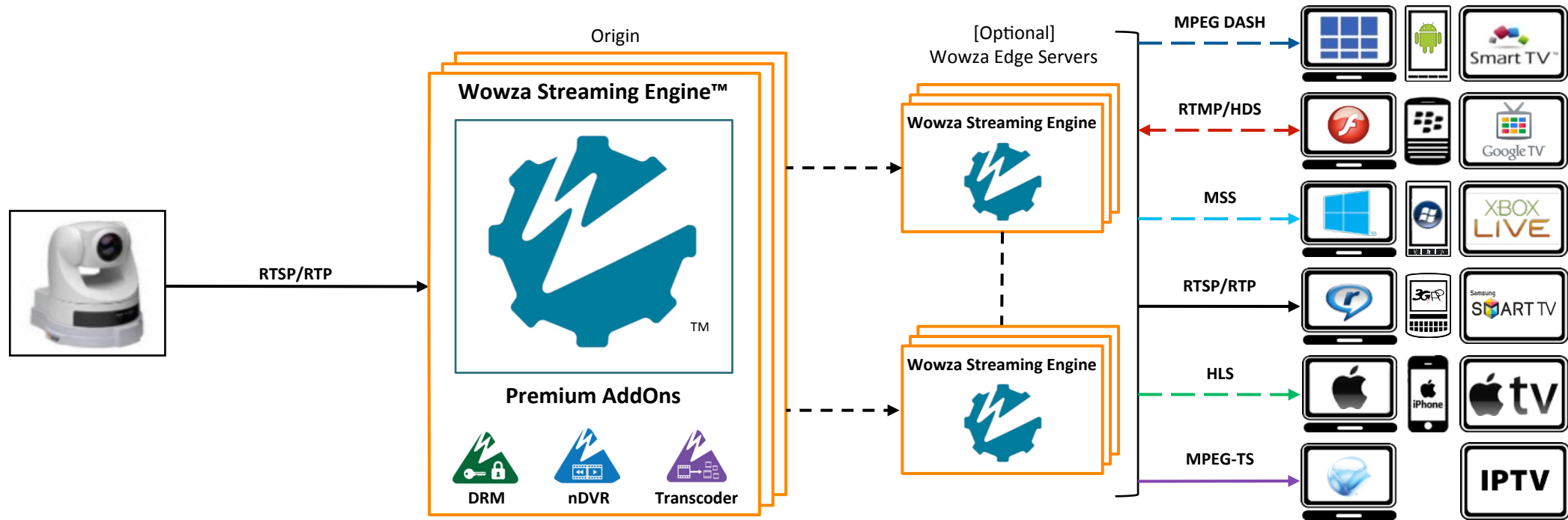
# IP Camera Support

We support IP Cameras such as:

...and many more

# IP Camera Features

- Power over Ethernet (PoE) eliminates the need for power cables and reduces installation costs
- Detection of video motion, audio and camera tampering
- Advanced security and network management features such as HTTPS encryption, IPv6 and QoS
- Digital PTZ (Pan/Tilt/Zoom)
- Two-way audio support
- Local storage

# IP Camera Demo



**H.264/AAC**

**RTSP**

**H.264/AAC**

**HLS**

AXIS P1344
IP Camera

Features:
- RTSP Stream
- HDTV 720p Resolution
- 1Mbps Video/Audio Bitrate
- Multiple H.264 streams
- Day/night functionality

WOWZA STREAMING ENGINE

nDVR      Transcoder

JWPLAYER
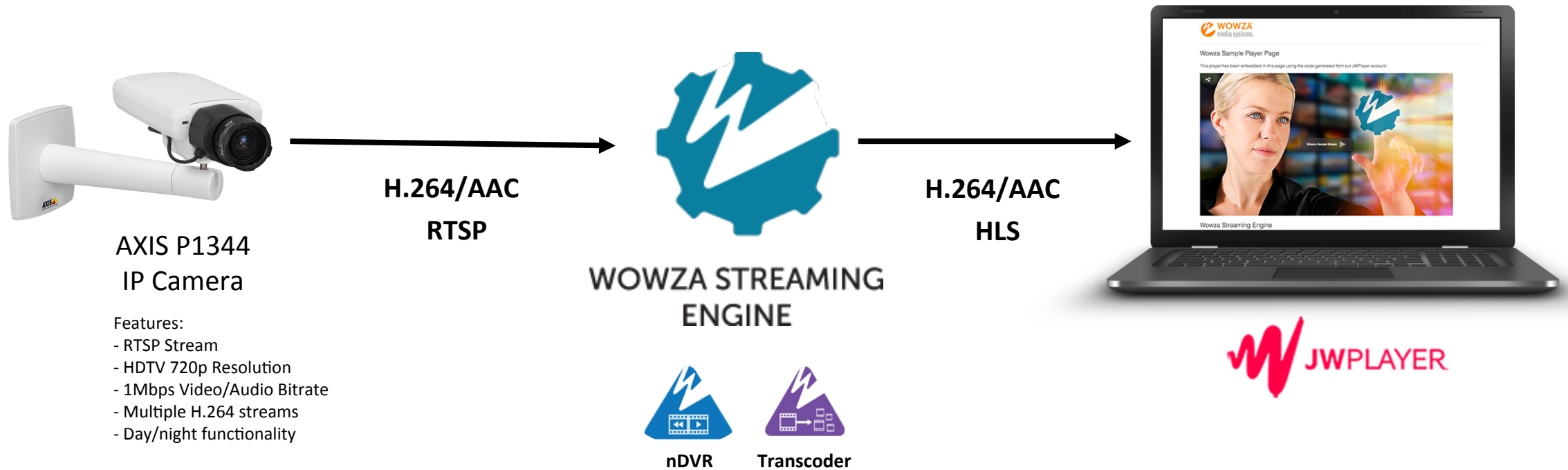
# DEMO

# Demo Summary



**Connect IP camera**

**Configure RTSP Stream**
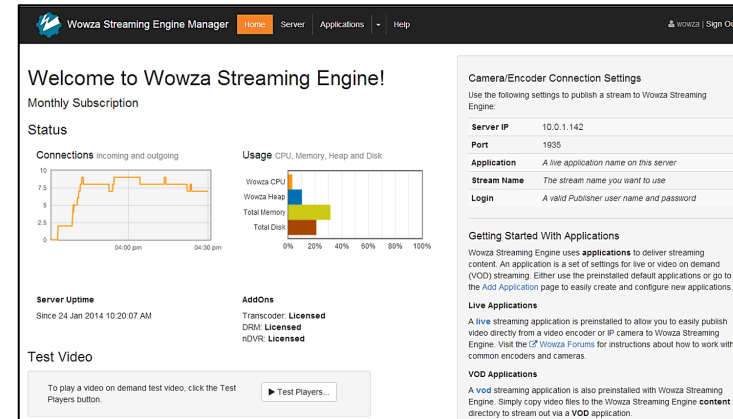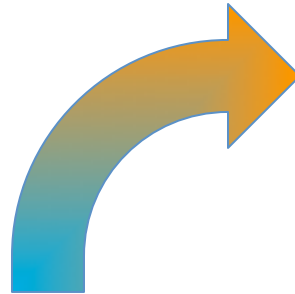
**Deliver with Wowza**

**View anywhere**

# Benefits of Wowza Streaming Engine

1. Easy setup and customization

2. Reliably connect to IP cameras

3. Robust feature set and APIs

4. Playback to any device

# Common Setup Problems

- Power over Ethernet (PoE)
- IP Address (Local vs Public)
  - Configure Router
  - Enable NAT traversal (port mapping) for IPv4 on Port 554 (RTSP) and/or Port 80 (HTTP)
- RTSP Stream Permissions
- IP Camera Firmware
- The default setting on the camera is to use both both Digest & Basic authentication. Make sure to set the camera to Basic authentication only
- Use VLC to test stream

WOWZA
media systems

# Axis RTSP Stream URL

Protocol     Permissions     Camera IP Address     Port Number     AXIS URL     Query string API to modify the stream dynamically

rtsp://user:password@169.254.104.17:554/axis-media/media.amp?videocodec=h264&streamprofile=wowza

WOWZA
media systems
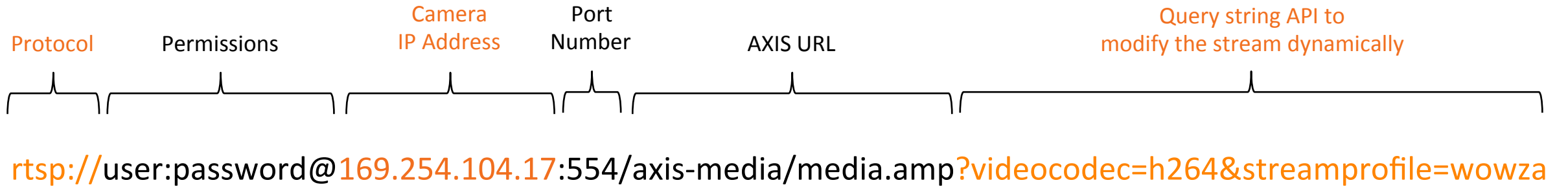
# TRANSMUXING AND TRANSCODING

# Transmuxing

- Rewrapping compressed audio and video (a.k.a. (re)packaging or packetizing)

- Requires minimal hardware resources

Incoming Stream
(e.g., RTSP)

**Wowza Streaming Engine™**

Outgoing manifest (e.g., F4M) &
MP4 fragment files (for HTTP)

H.264 Video &
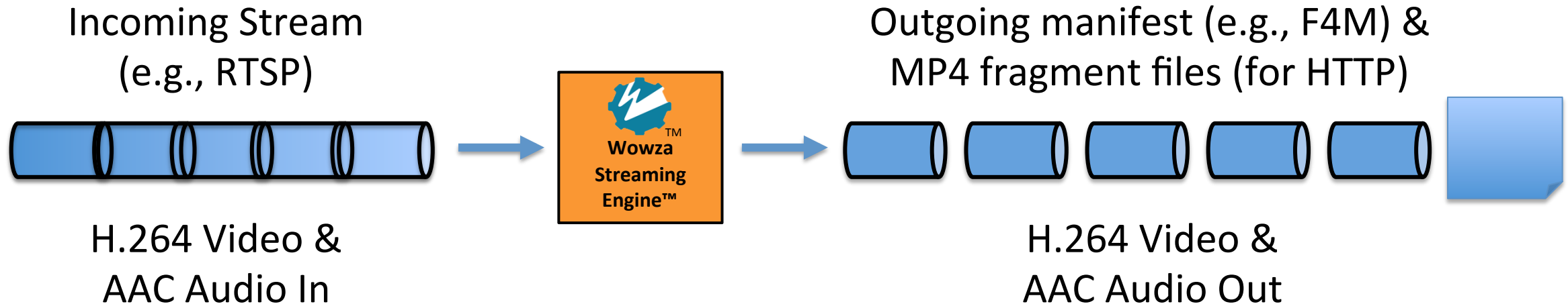AAC Audio In

H.264 Video &
AAC Audio Out

# Repackaging in Wowza Streaming Engine

Repackaging is core functionality…

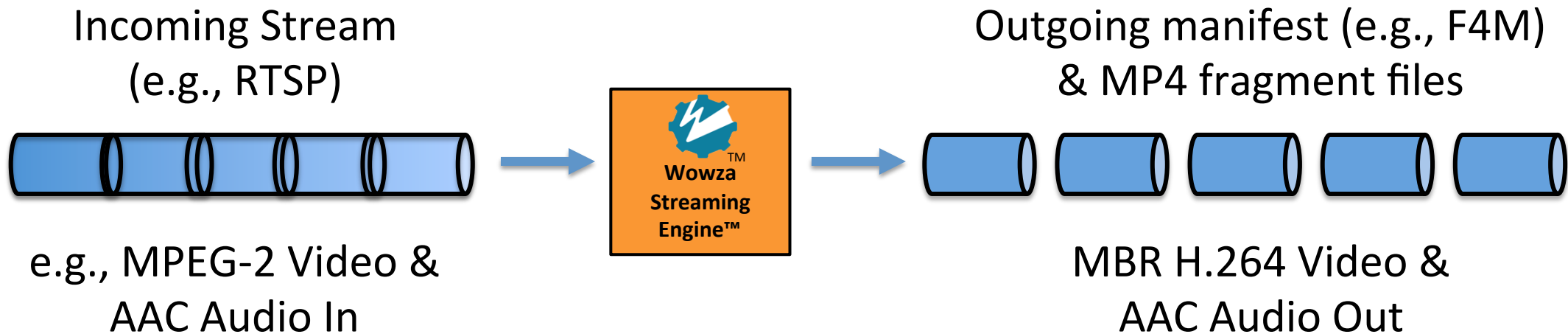| | Input Files / Streams | Output Streaming Formats |
|---|---|---|
| **Live IP Camera** | RTSP<br><br>Video Codec: H.264<br>Audio Codec: AAC | RTMP, RTSP/RTP, Multicast, Apple HLS, Adobe HDS, Microsoft Smooth Streaming, MPEG-DASH |

Notes

1. For anything except H.264 and AAC as inputs, transcoding is required.

2. Microsoft Smooth Streaming does not support MP3 audio. Android doesn't support MP3 for RTSP.
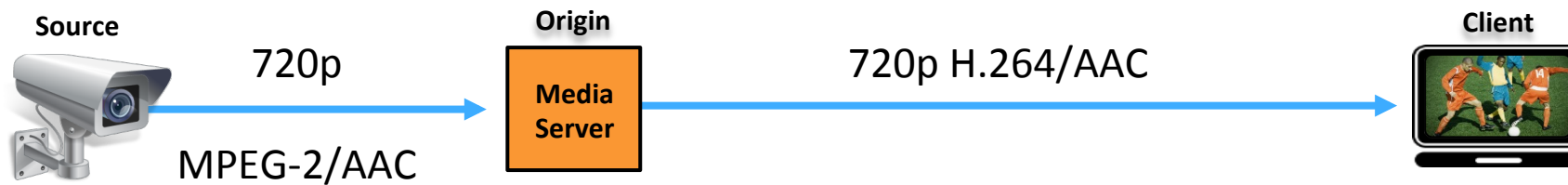
WOWZA
media systems

# Transcoding

- Convert from one or more codecs, bitrates, or resolutions to others
- Typically requires significant server resources
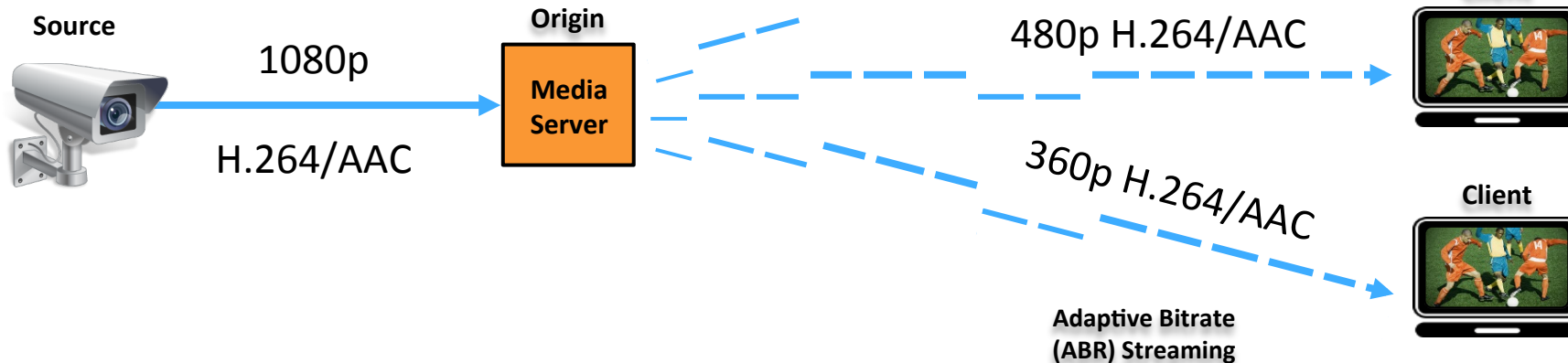- Can be combined with packetization

Incoming Stream
(e.g., RTSP)

**Wowza Streaming Engine™**

Outgoing manifest (e.g., F4M)
& MP4 fragment files

e.g., MPEG-2 Video &
AAC Audio In

MBR H.264 Video &
AAC Audio Out

# Live Transcoding & Transrating

## Example Live Transcoding

**Source**

720p

MPEG-2/AAC

**Origin**
**Media Server**

720p H.264/AAC

**Client**

## Example Live Transrating

**Source**

1080p

H.264/AAC

**Origin**
**Media Server**

720p H.264/AAC → **Client**

480p H.264/AAC → **Client**

360p H.264/AAC → **Client**

**Adaptive Bitrate (ABR) Streaming**

WOWZA
media systems

# Wowza® Transcoder AddOn

- Live transcoding to properly key-frame aligned H.264 streams for single or adaptive bitrate (ABR) streaming
- Ingest from live IP cameras

Wowza Transcoder AddOn converts these formats...

|       | Input (Decoding) | Output (Encoding) |
|-------|------------------|-------------------|
| Audio | MP3, AAC (LC & HE), MPEG-1 Part 1/2, Speex, G.711 | AAC (LC & HE) |
| Video | MPEG-2, MPEG-4 Part 2, H.264/AVC | H.264/AVC, H.263 |

WOWZA
media systems

# Wowza® Transcoder AddOn Features

- ## Graphical Overlays
  - Enable image overlays quickly & easily
  - Add premium TV-like experiences
  - Enable dynamic video overlays by using a Java-based API for:
    - advertising, titling, watermarking, company logos, and tickers used for sporting events and stock markets
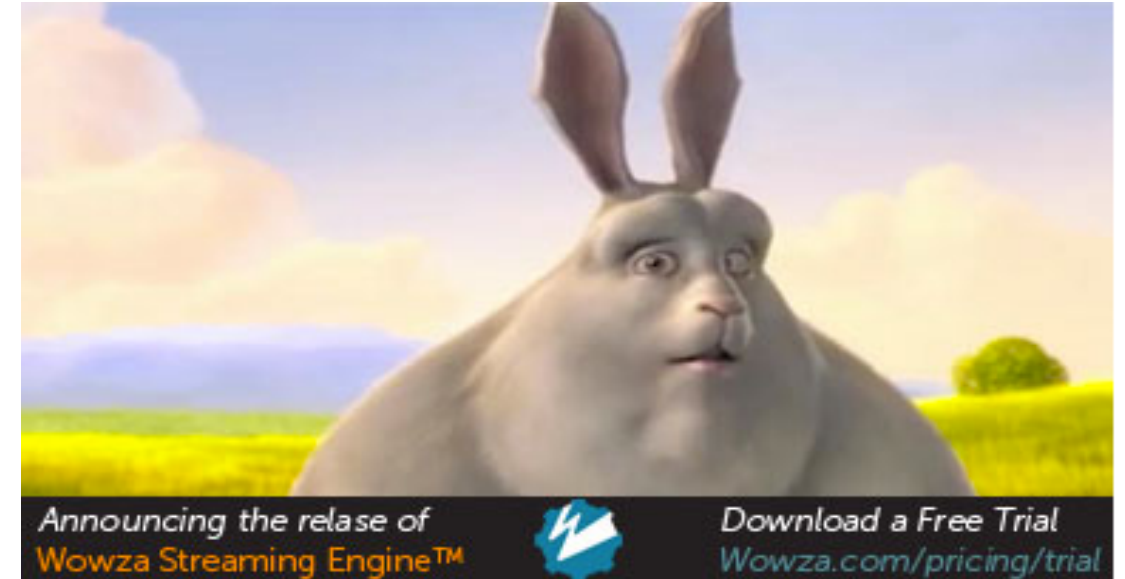
# Security

- Incoming security:
  - Enable password authentication for RTSP-based encoders
  - Restrict RTSP-based publishing from specific IP addresses

- Outgoing Security:
  - Use SecureToken content protection to secure playback of transcoded streams to devices with specific IP addresses
  - Enable RTMPS encryption to use a secure socket layer (SSL) for network connections for RTMP playback



- Wowza DRM facilitates integration with various digital rights management platforms to deliver on-the-fly encryption for live and video-on-demand content to any screen.
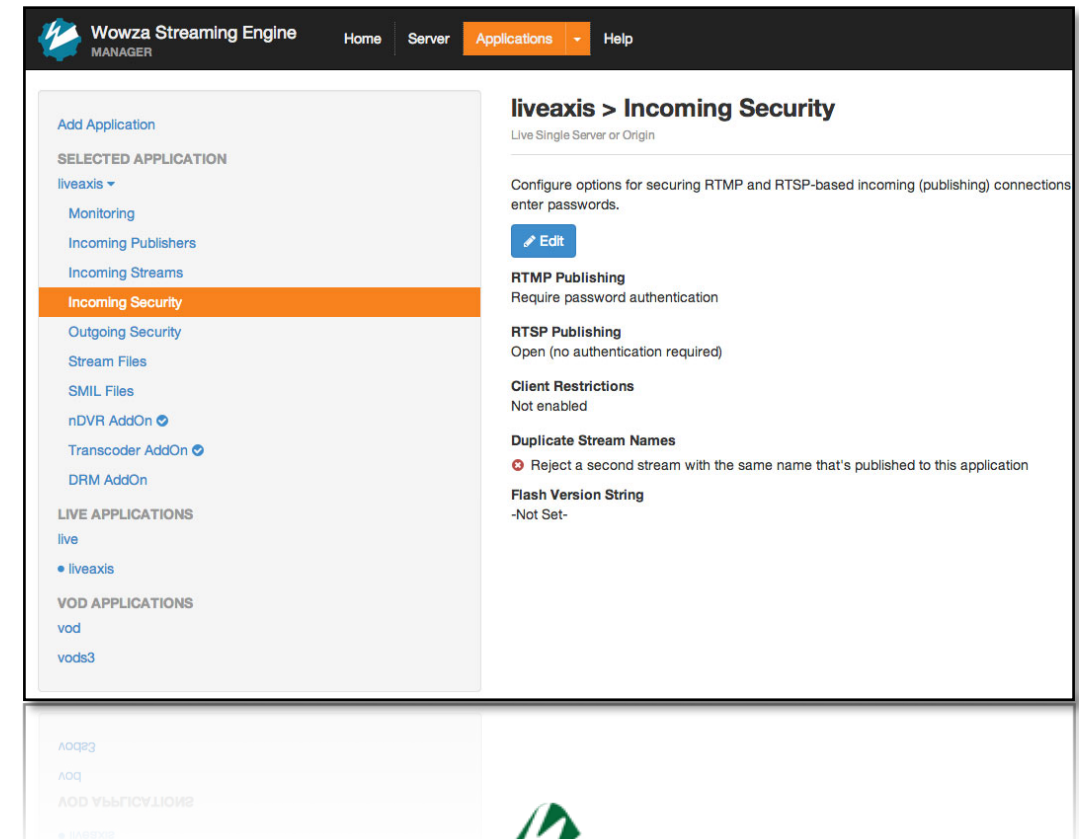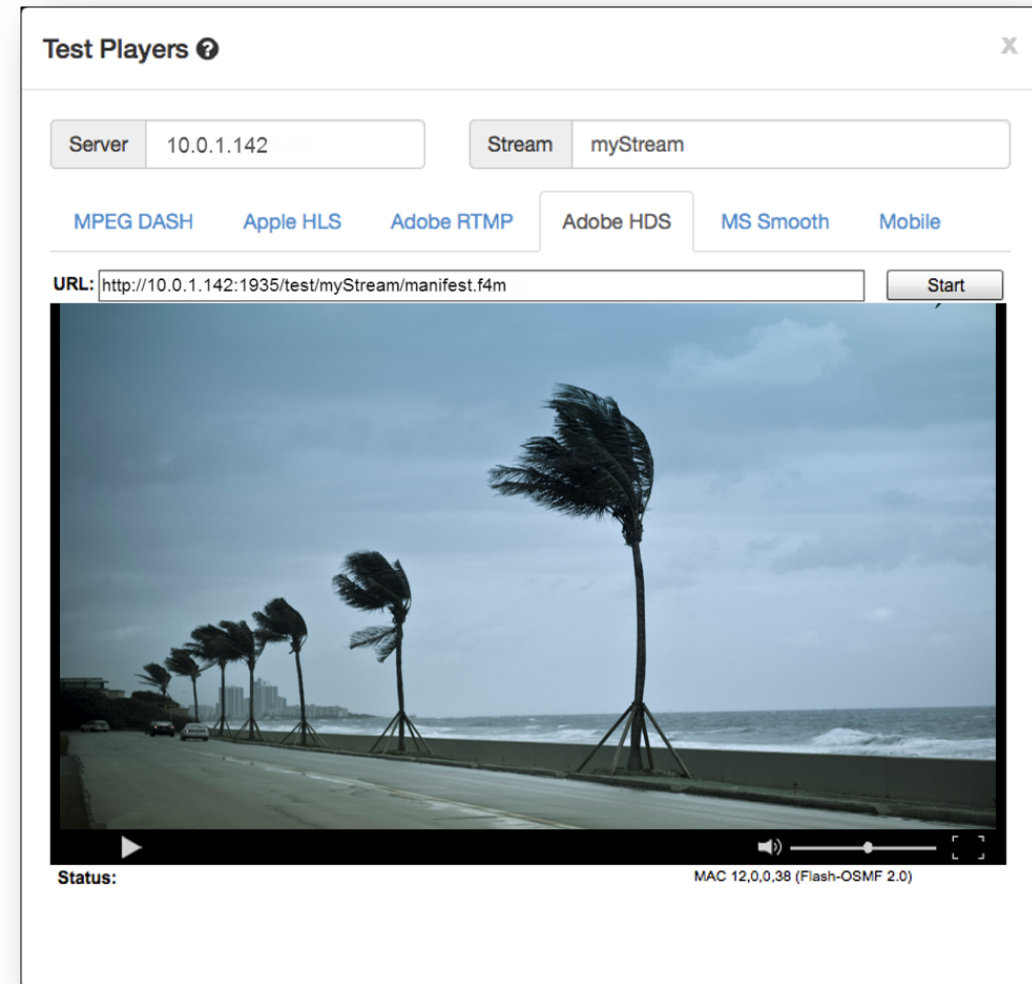
Wowza DRM

# PLAYERS

# Players

- Built-in test players
- Online player configurators
- Hybrid players
  - JW Player
  - Flowplayer
  - others
- VLC Media Player (for testing)

# SCALING
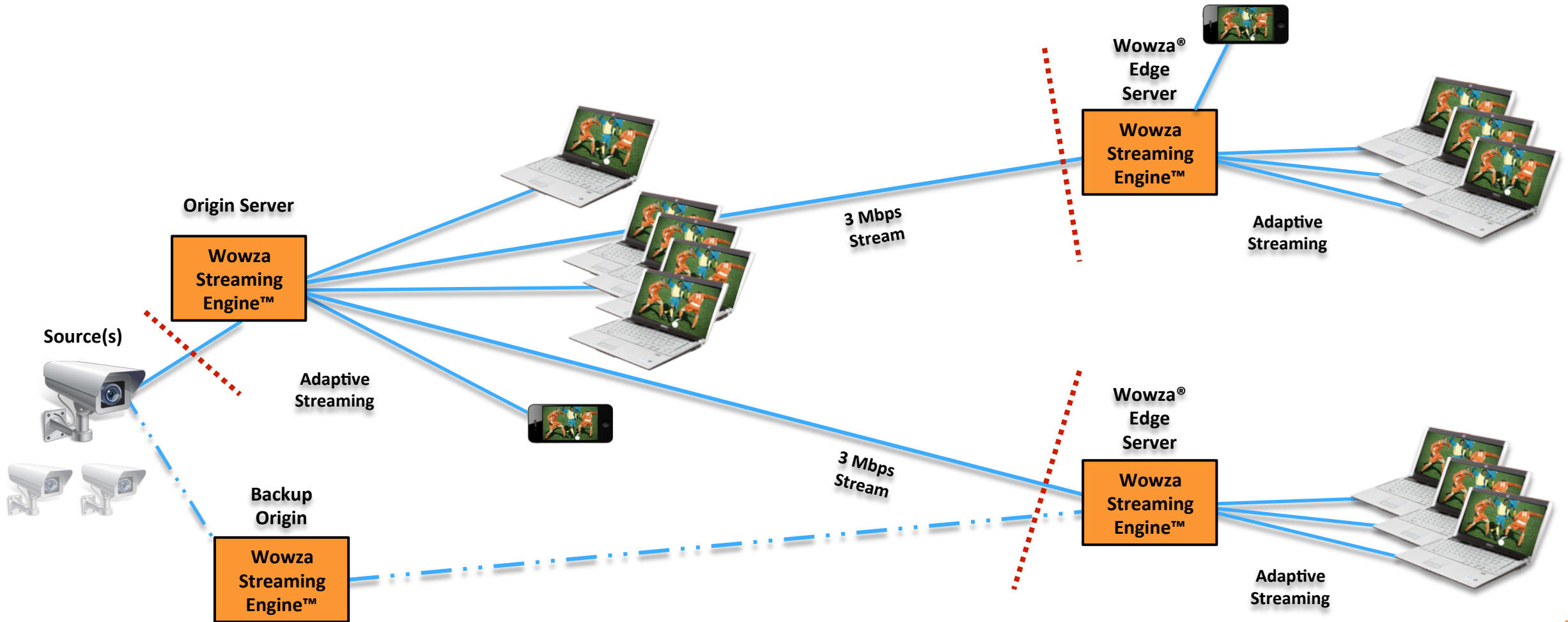
# Plan for Scalability

- Tune for production
- Choose a subscription model
- Inside an enterprise, consider multicast
- Outside the firewall, consider HTTP
- Deliver from the cloud – private or public
- To reach Android and feature phones, consider RTSP

# Live Stream Origin-Edge Configuration

# Next Steps

- Download a Trial license of Wowza Streaming Engine at [www.wowza.com](www.wowza.com)

- Read [Quick Start Guides for Streaming Engine Manager](#)

- [Re-stream video from an IP camera (RTSP re-streaming)](#)

- [Solera website for stream URL syntax](#)

- [Wowza Transcoder AddOn Overview](#)

- Need help? [Contact Support for assisstance](#)

Wowza Media Systems

# QUESTIONS?

WOWZA
media systems