



# Azure Media Services

## Media Technology Basics

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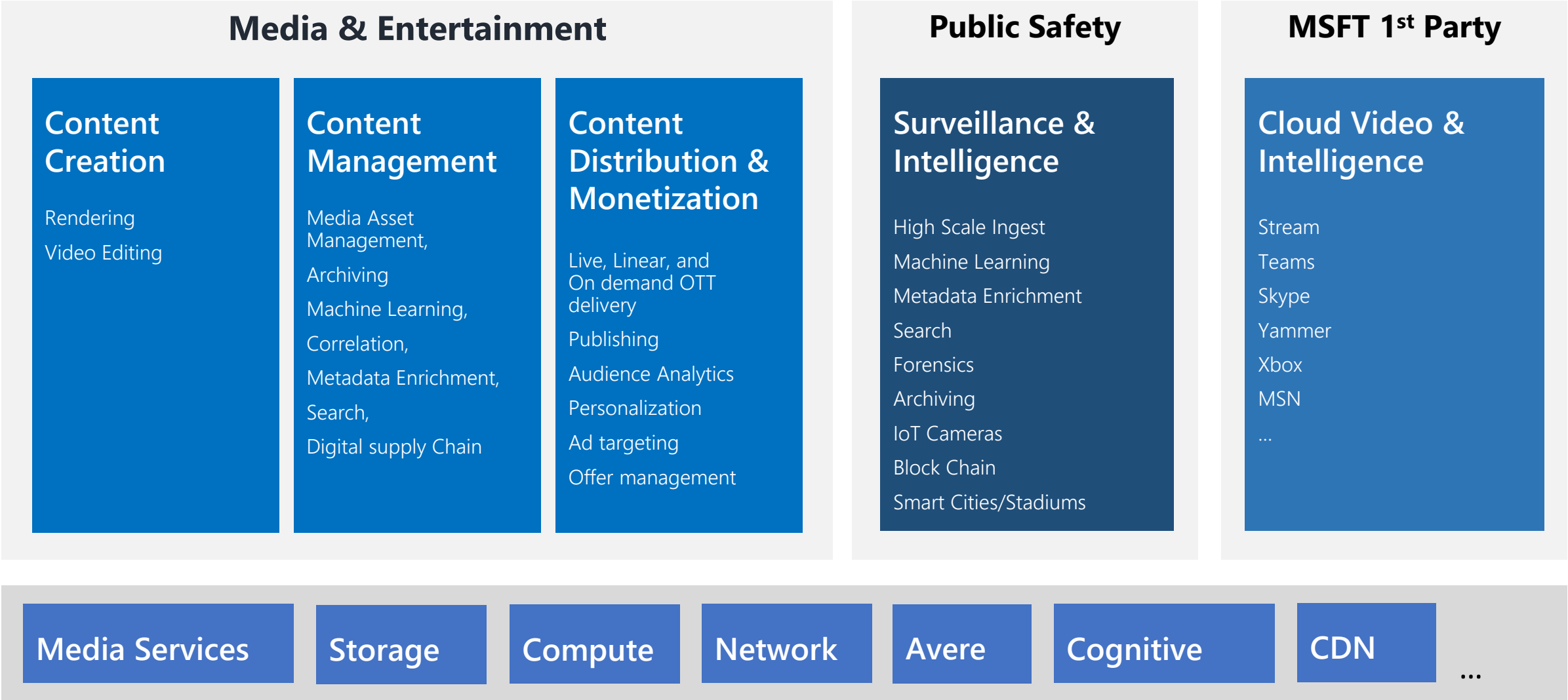
Microsoft Corporation



Azure Power Lunch Session 6/28/2019

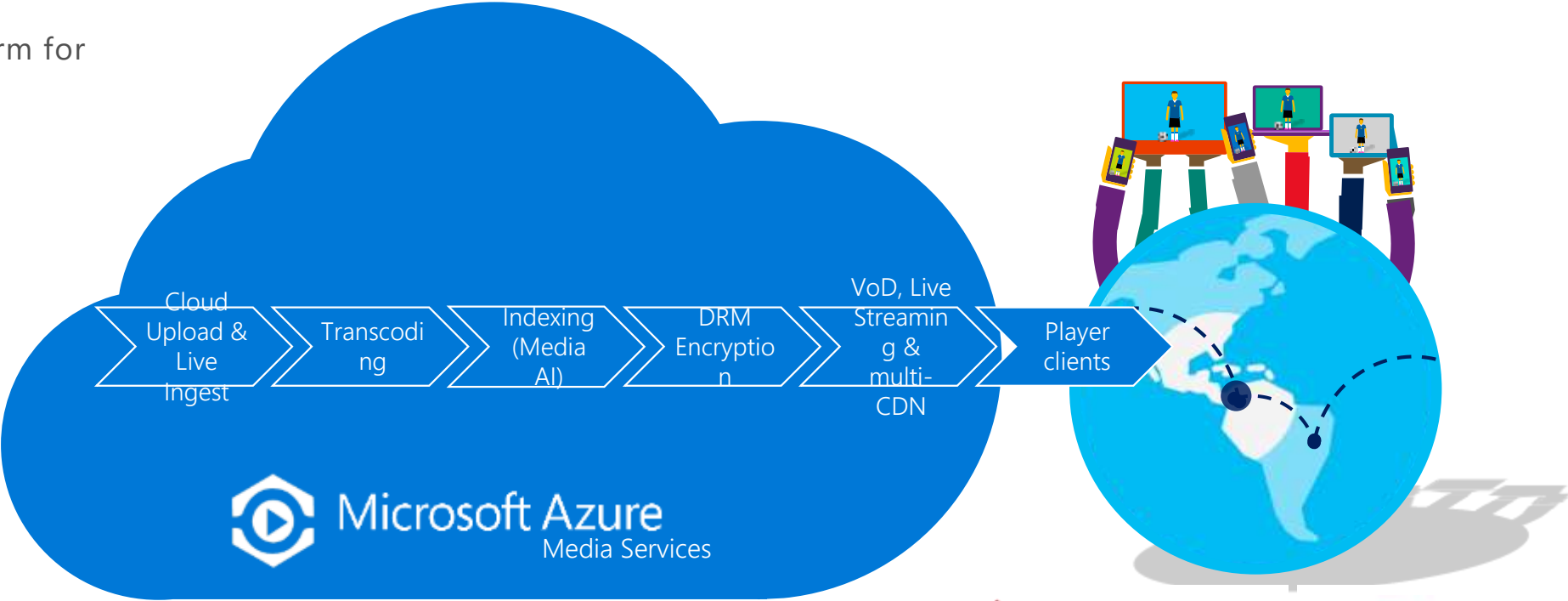
# Media on Azure: Focus Areas

Intelligent Cloud Platform for Media & Entertainment, Public Safety & Justice, and Enterprise



# Azure Media Services

An extensible, multi-tenant platform for end-to-end media workflows

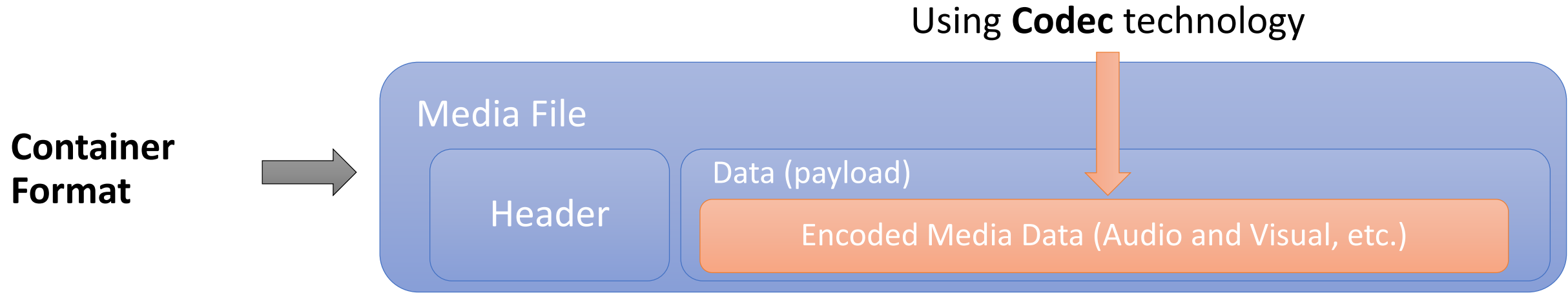


Microsoft Azure  
Media Services

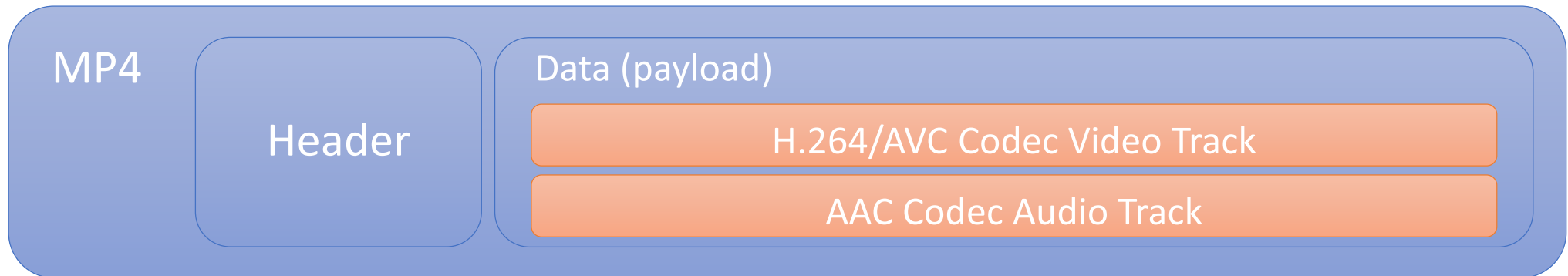


Cloud Controls Matrix v3.0.1	Content Protection Standard	Cloud & Application Security Guidelines	Federation Against Copyright Theft
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# Media File Basics



**An example of Video file:**

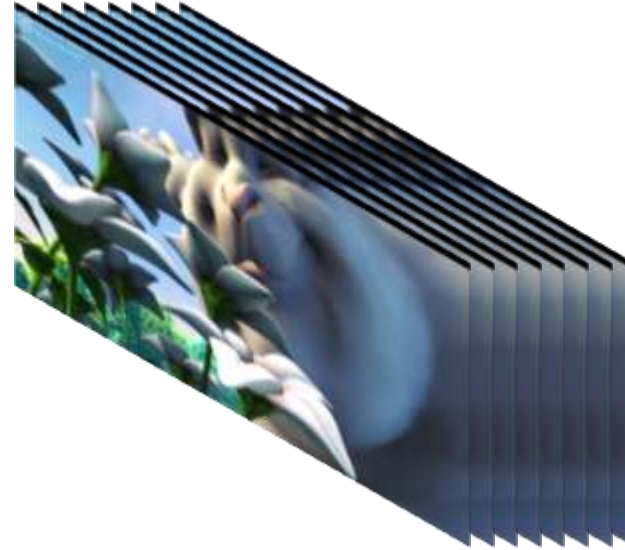


# Why Video Compression is used?



Picture

e.g. Full HD (1080p) resolution  
1920x1080 pixels (24 bit color/pixel)



Video = Motion Pictures

e.g. 30 fps (= 30 frame per sec)

1 frame video =  $(1920 \times 1080) \text{ (pixels)} \times 24 \text{ (bits/pixel)} / 8 \text{ (bytes/bit)} = 6,220,800 \text{ (bytes)} = \mathbf{5.93 \text{ (MB/frame)}}$

1 sec video =  $5.93 \text{ (MB/frame)} \times 30 \text{ (fps)} = \mathbf{177.98 \text{ (MB/sec)}}$

Total video size (2 hours video) =  $177.87 \text{ (MB/sec)} \times 60 \text{ (secs)} \times 120 \text{ (mins)} = 1,280,664 \text{ (MB)} = \mathbf{1.22 \text{ (TB)}}$

# Codec

- **Codec = CODer-DECoder**

- A device or computer program for encoding or decoding a digital audio/video signals for transmission and storage
- Compress the data to reduce transmission bandwidth or storage space
  - Non-compression or Compression
- Compression classification: Lossy Compression and Lossless Compression

Video Codec	Specification	Classification
H.264/AVC	MPEG-4 Part 10	Lossy Compression
H.265/HEVC	MPEG-H Part 2	Lossy Compression
MPEG-2 (H.262)	MPEG-2 Part 2	Lossy Compression
MPEG-1	MPEG-1 Part 2	Lossy Compression
Apple ProRes	Apple Proprietary	Lossy Compression
WMV	Windows Media Video	Lossy Compression
VC1	SMPTE standard (subset of Windows Media Video)	Lossy Compression
VP8, VP9	Google's codec	Lossy Compression

Audio Codec	Specification	Classification
LPCM (or PCM)	Linear Pulse Code Modulation	Non-compression
ALAC	Apple Lossless Audio	Lossless Compression
FLAC	Free Lossless Audio	Lossless Compression
AC3	Dolby Digital	Lossy Compression
MP1, MP2, MP3	MPEG-1/2 Audio Layer I, II, III	Lossy Compression
AAC HE-AAC	MPEG-4 Audio Advanced Audio Coding	Lossy Compression
WMA	Windows Media Audio	Lossy Compression
Opus	IETF Standard Audio Codec	Lossy Compression
Vorbis	Xiph.Org Foundation Audio Codec	Lossy Compression

An example of video and audio codecs

# Demo

- Create Azure Media Services in Azure Portal
- Assets – Upload Video
- Encode Video to Multi-bitrate
- Publish
- Stream video / Play