

# STREAMING SERVER

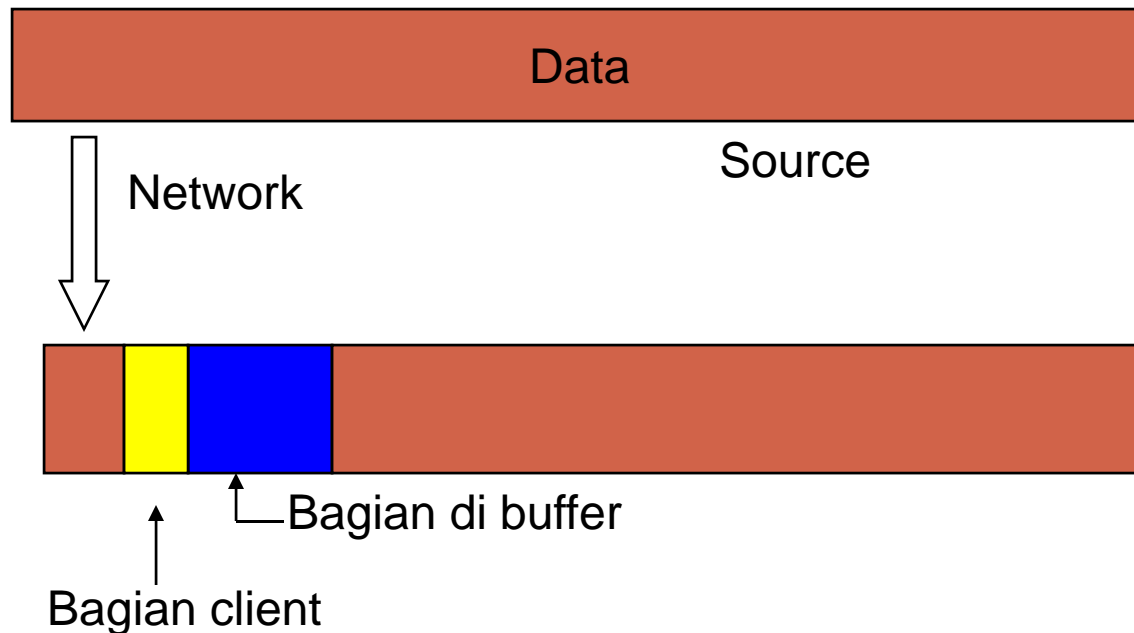
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**MUHAMMAD ZEN S. HADI, ST. MSC.**

# Teknologi Streaming

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Sebuah teknik untuk mentransfer data sedemikian rupa sehingga dapat diproses sebagai aliran yang stabil dan berkelanjutan, client tidak perlu men-download seluruh file untuk melihatnya.



# Keuntungan

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- Mengurangi waktu download
- Menyediakan steady service
- System yang lebih lambat dapat mengambil keuntungan dari penggunaan teknologi streaming
- Menyediakan service on demand

## **Aplikasi yang menggunakannya:**

Streaming Video, IP telephony, Internet Radio, Distance learning, Videoconferencing, Interactive games dll.

# Kerugian

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- Sulit untuk menjaga service steady jika bandwidth rendah
- Maintenance streaming server cukup mahal
- Packet loss mungkin terjadi selama transmisi

# 3 tipe metode pengiriman dari media streaming

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- Streaming Stored Audio and Video
- Streaming Live Audio and Video
- Real-Time Interactive Audio and Video

# Media Player or Helper Application

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## **3 produk utama untuk media streaming :**

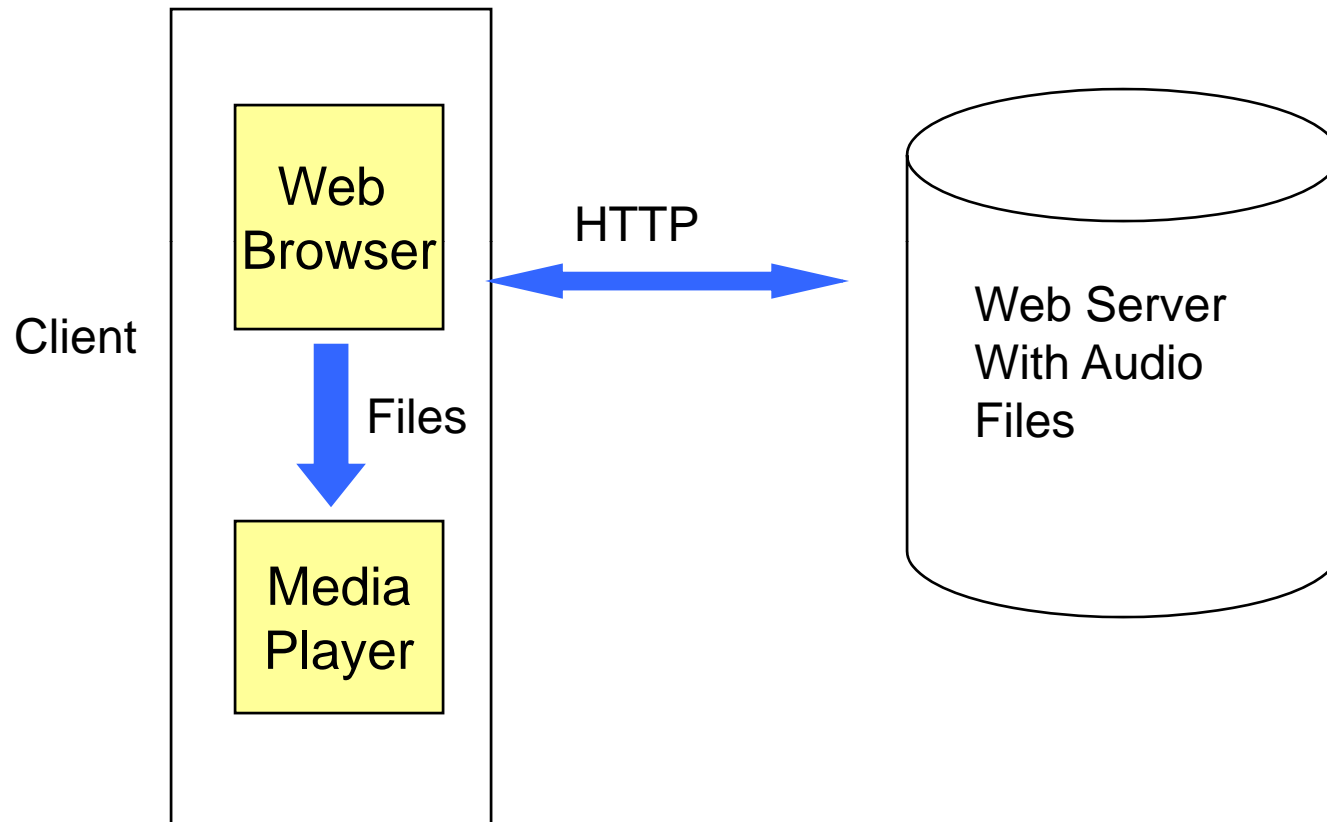
RealPlayer (RealNetworks),  
Media Player (Microsoft) and  
QuickTime (Apple).

## **3 tugas utama dari media player :**

- Decompression
- Jitter Removal
- Error Correction

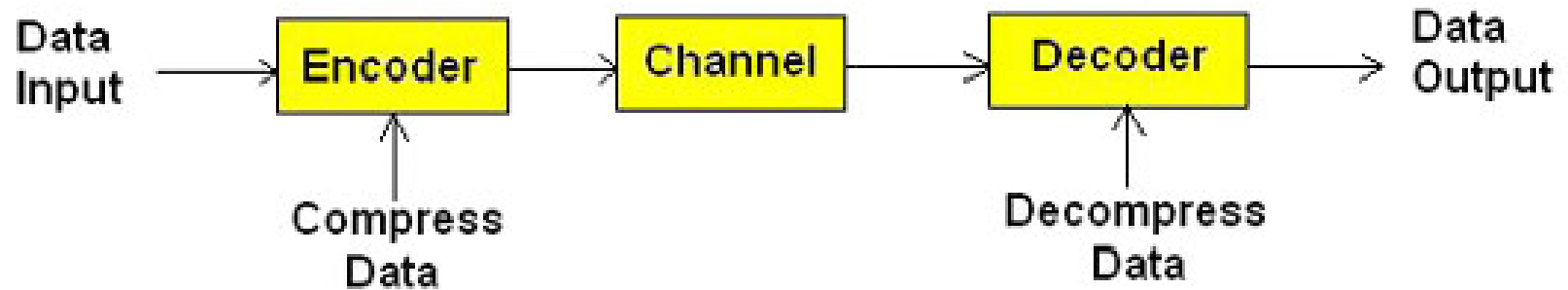
# Accessing Audio & Video melalui Web server

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# Prinsip Kompresi

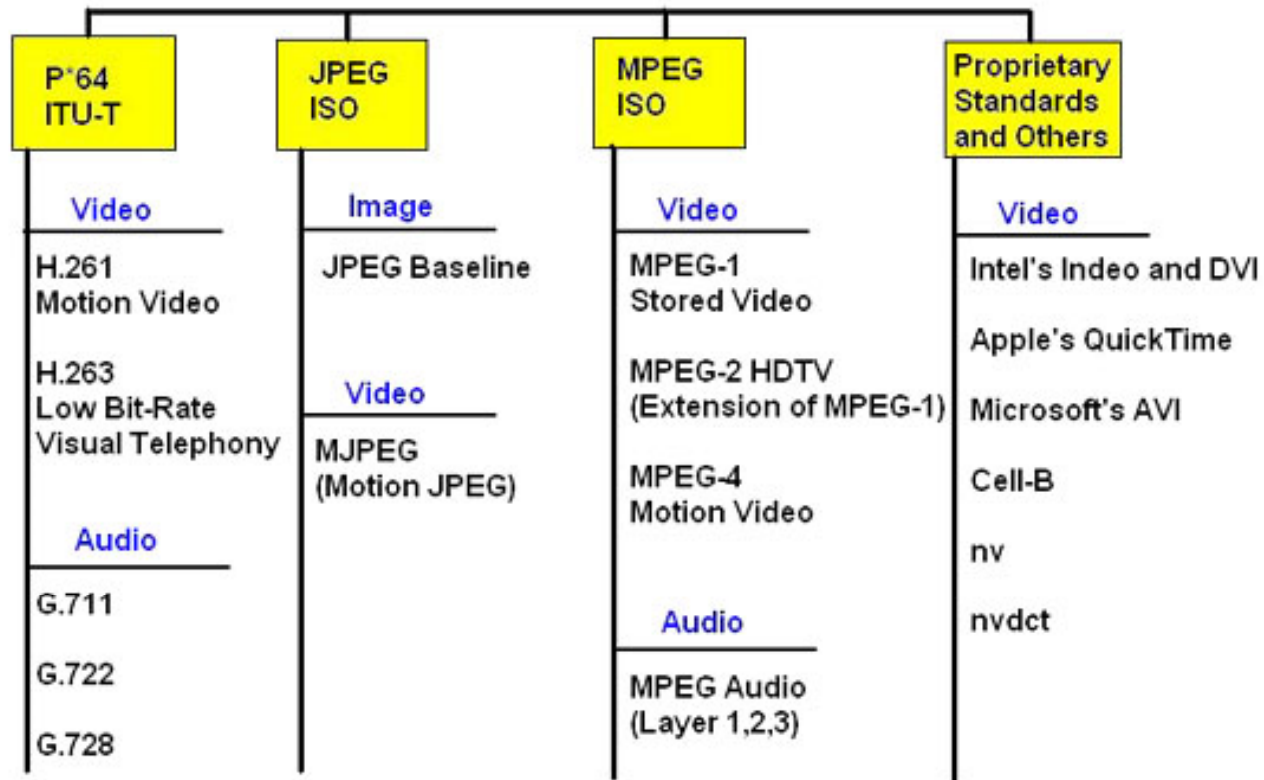
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# Standar Kompresi

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# Bandwidth untuk Video

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Encoding	Bandwidth	Resolution	Standard
H.261	64 Kbps-2 Mbps	177x144	QCIF (conference)
		352x288	CIF (VHS quality)
MPEG	3-8 Mbps	352x288	CIF (VHS quality)
	15-25 Mbps	720x486	CCIR601 (PAL)
	60-100 Mbps	1920x1080	HDTV
MPEG-1	1.2-3 Mbps	352x288	CIF (VHS quality)
	5-10 Mbps	720x486	CCIR601 (PAL)
	20-40 Mbps	1920x1080	HDTV
MPEG-2 (H.262)	1-2 Mbps	352x288	CIF (VHS quality)
	4-5 Mbps	720x486	CCIR601 (PAL)
	8-10 Mbps	960x576	EDT
	20-30 Mbps	1920x1080	HDTV

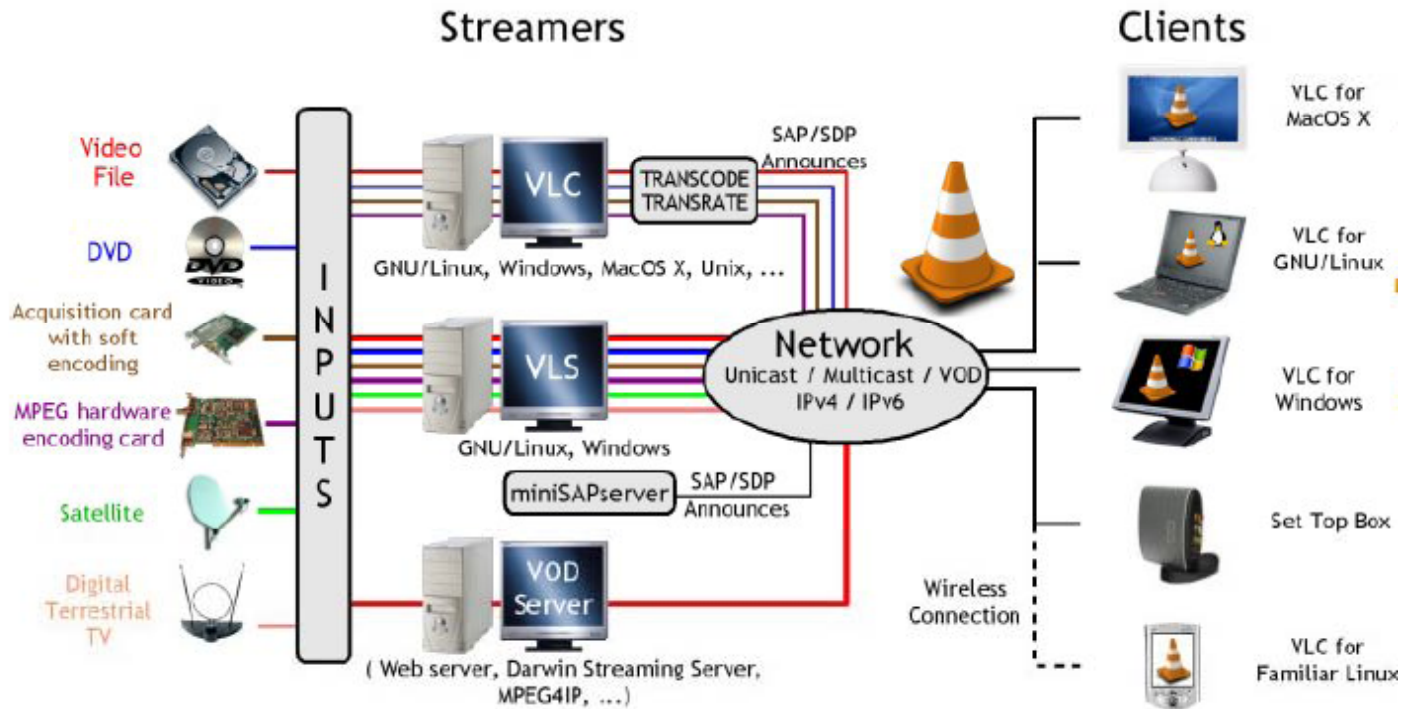
# Contoh Live Video Streaming

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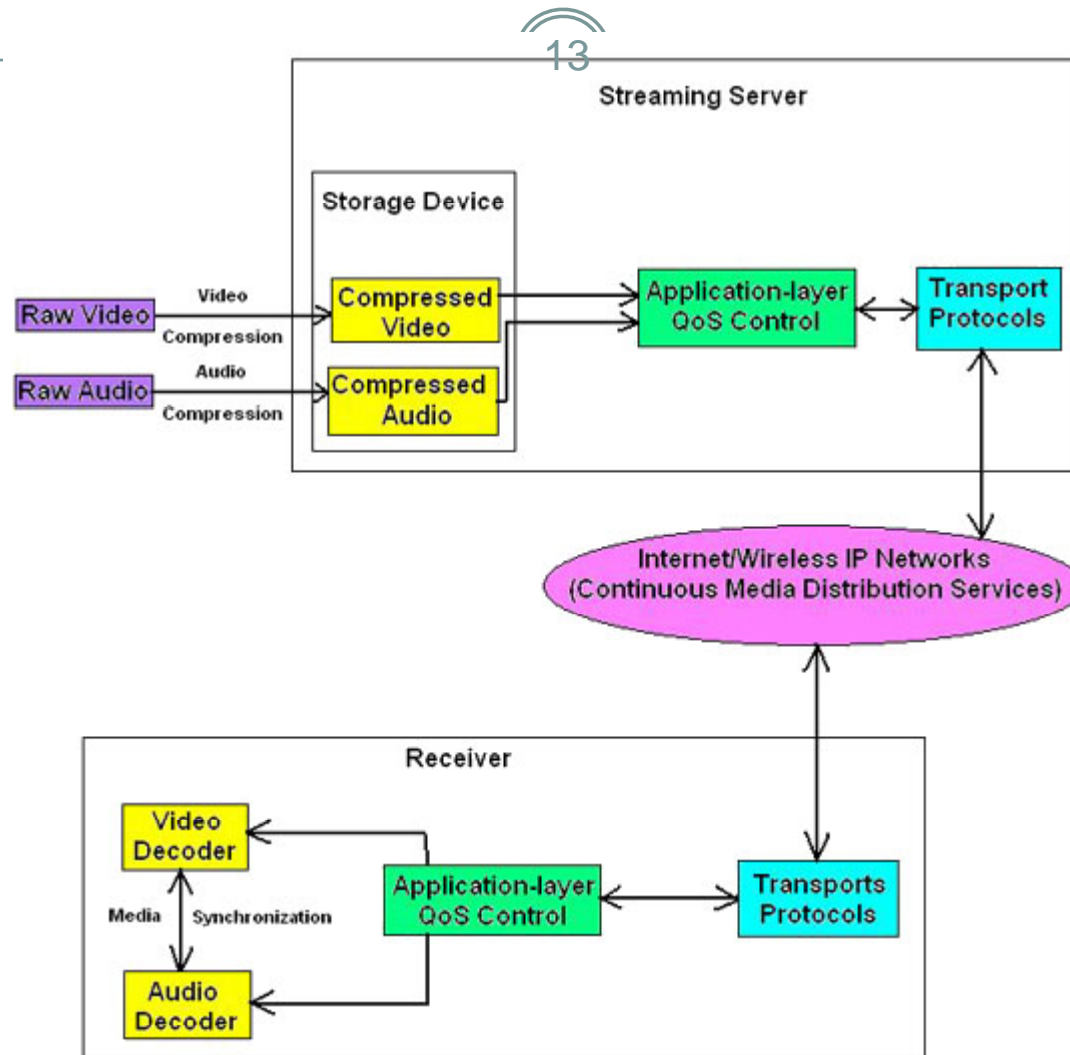
# VLC System

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- 0.5 to 4 Mbit/s for a MPEG-4 stream,
- 3 to 4 Mbit/s for an MPEG-2 stream read from a satellite card, a digital television card or a MPEG-2 encoding card,
- 6 to 9 Mbit/s for a DVD.

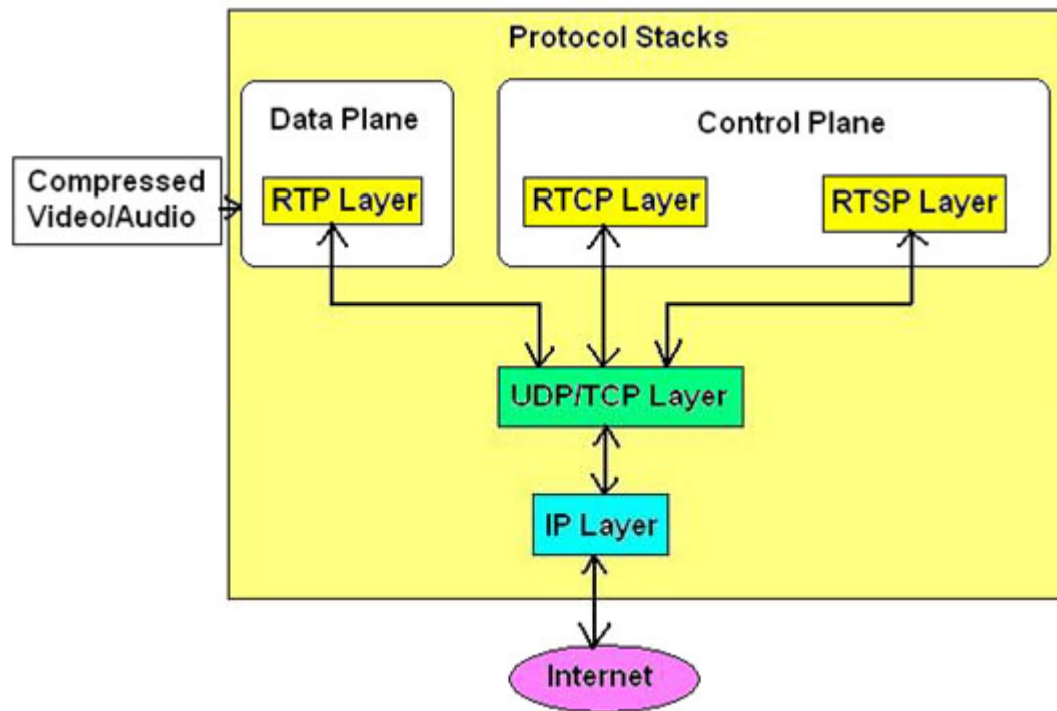
# Arsitektur Video Streaming



Architecture for Video Streaming

# Protokol untuk media Streaming

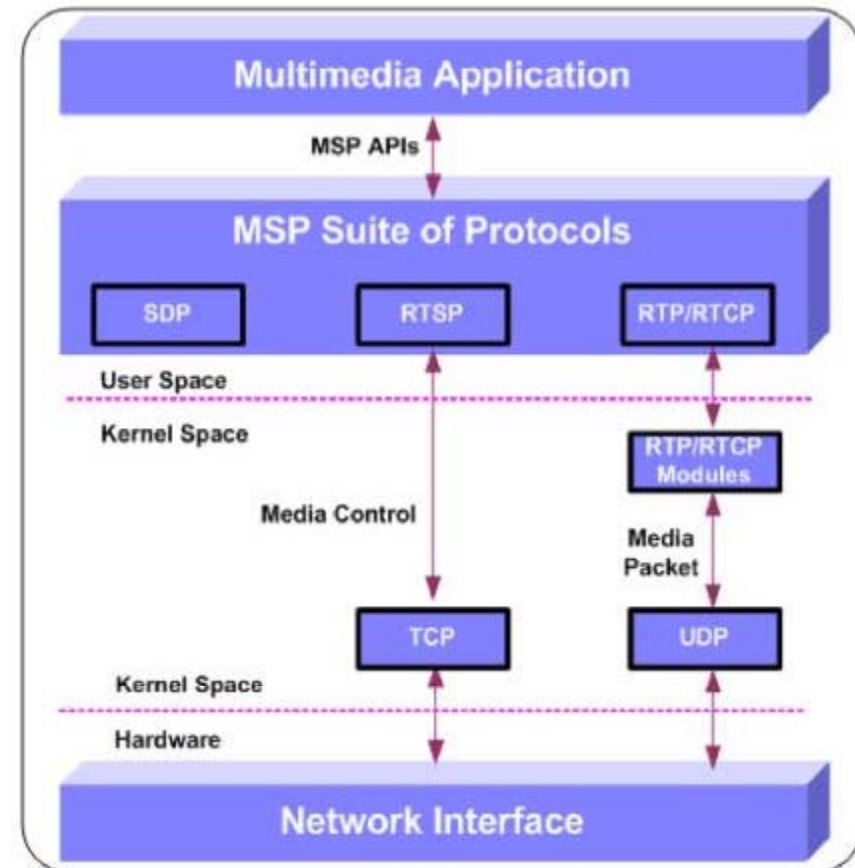
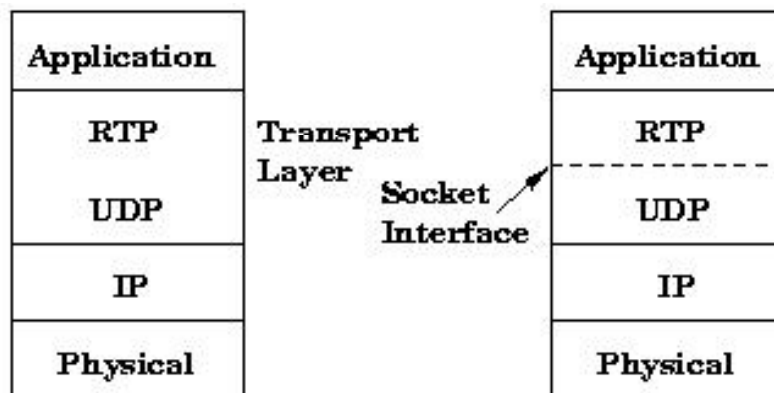
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# Protocol Standards

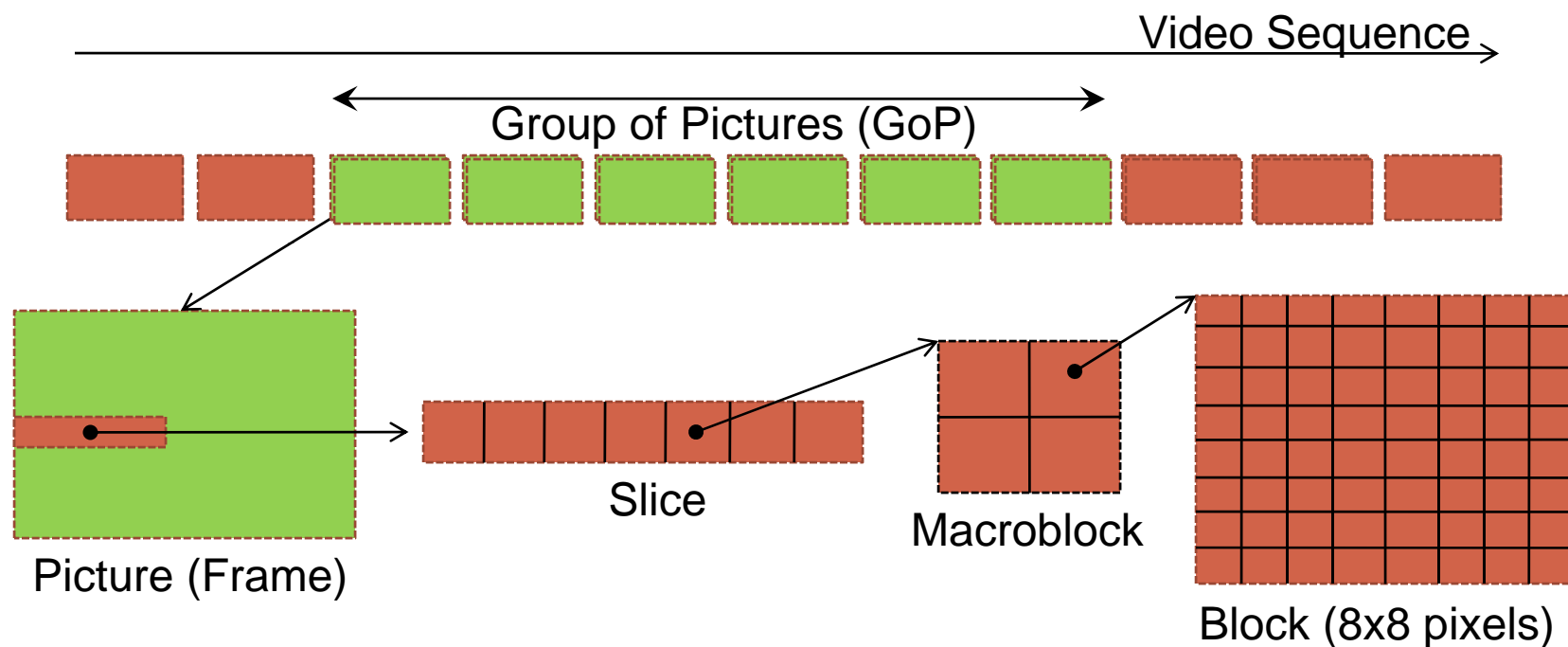
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- RTP & RTCP
- RSVP
- RTSP
- UDP
- HTTP



# What is video?

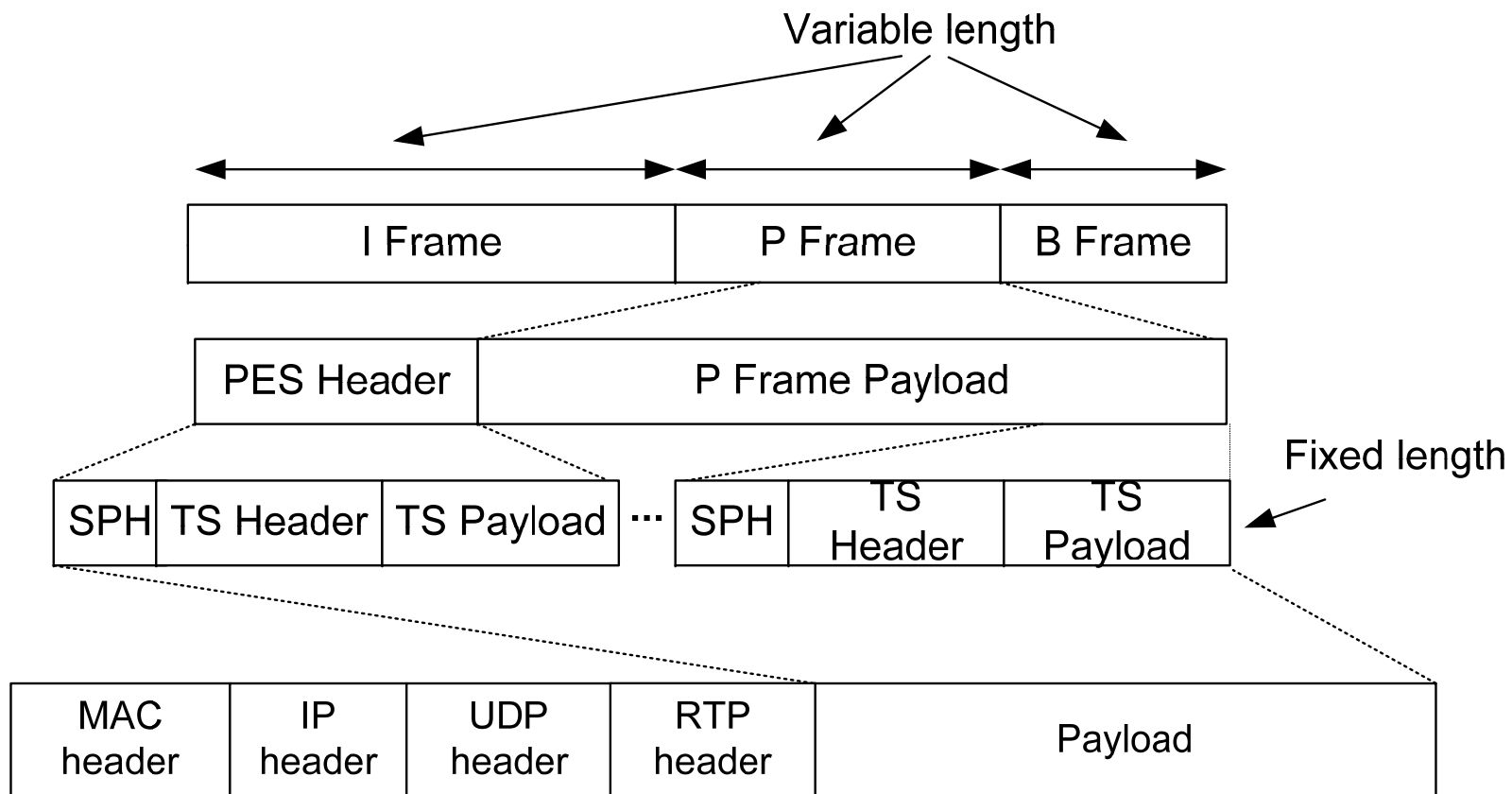
## Not all bits are created equal



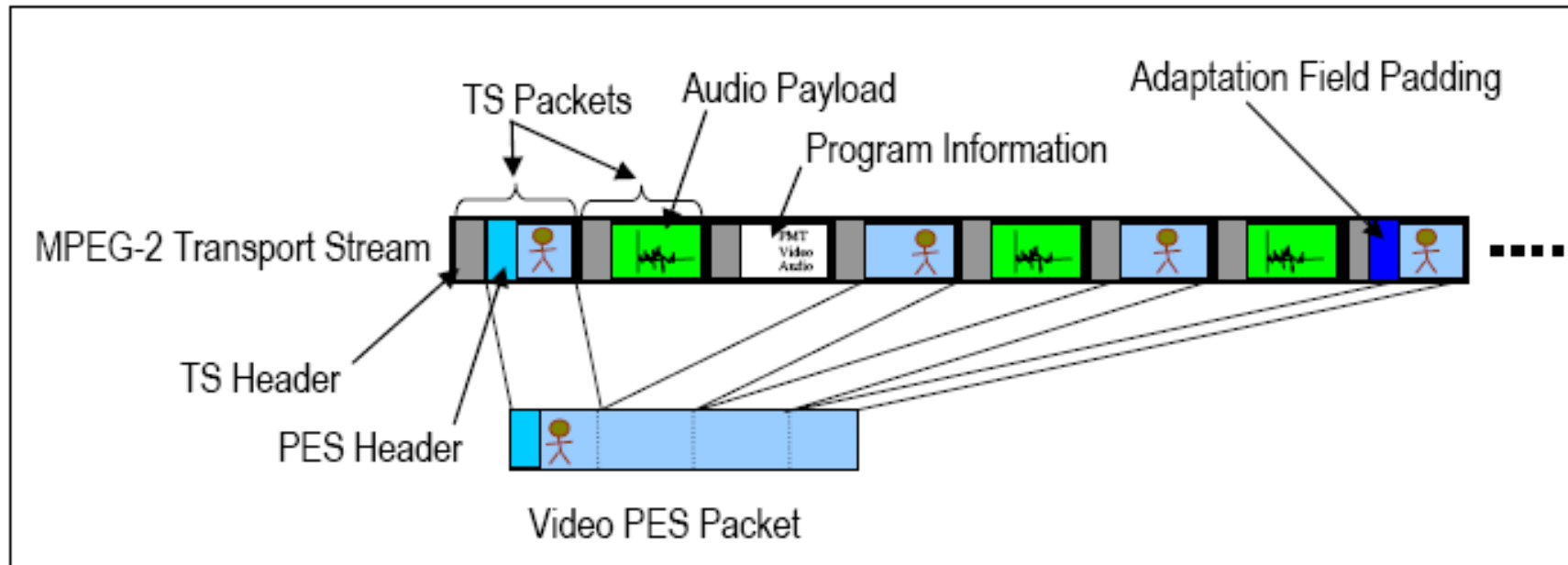
- Intra (I) frames, Predicted (P) Frames or Bidirectional (B) Frames.
- MPEG-2 typically uses one I-frame followed by 15 P/B frames to make up a GOP.



# Transport Stream



# One TS contains audio, video, data



TS Header (4 bytes) has an adaptation field control. This is used among other things to identify the presence of PCR (Program Clock Reference) following the header.

# Teknologi pada Windows

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# Perbandingan dari tool kompresi

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Tool	Helix Producer	Adobe Premiere's RealMedia Plug-in	Adobe Premiere's Windows Media Plug-in	Helix Mobile Producer
<b>File Format</b>	.rm	.rm	.wmv	.rm
<b>Bit Rate</b>	50 kbps	50 kbps	50 kbps	50 kbps
<b>Video Codec</b>	8	8	8	9
<b>Frame Rate</b>		10 fps	10 fps	10 fps
<b>Resolution</b>	208x160	208x160	208x160	208x160
<b>Size</b>	1.72 MB	1.72 MB	1.62 MB	1.73 MB
<b>Encoding Time</b>	6 min 5 sec	4 min 40 sec	1 min 39 sec	5 min 23 sec
<b>Result</b>	1s buffer. The image is sharp, but sometimes blocking occurs. The motion is smooth when the movement is not very big, but for big movement, the motion is no longer smooth.	1s buffer. Sometimes the image becomes blurred, but no blocking occurs. The motion is also only smooth when there is no big movement.	1s buffer. The audio is obviously no as well as the previous two, not clear. The image is blurred. The motion is not smooth enough even the movement is not very big, and sometimes even stops for 1 or 2 seconds.	7s buffer. The image is sharp, but if the movement is big, the image becomes blurred. The motion is jerky. But if we can get much better quality if we optimize the parameter settings. There is always a mark in the compressed file. By gaining another version can solve this problem.