Streaming

Aj.Drusawin Vongpramate

Information Technology

Science, BRU

Streaming

In the early days of streaming media -- the mid-to-late 1990s -- watching videos and listening to music online wasn't always fun.

In 2006, 57 million people listen to Internet radio every week. They watched more than a million streaming videos a day on YouTube [source: Reuters]. The same year, television network ABC started streaming its most popular TV shows over the Web.

Ref : https://computer.howstuffworks.com/internet/basics/streaming-video-and-audio.htm

Streaming

All of this data gets to where it needs to go because of sets of rules known as protocols, which govern the way data travels from one device to another. You've probably heard of one protocol -- hypertext transfer protocol (**HTTP**) deals with hypertext documents, or Web pages. Every time you surf the Web, you're using HTTP.

Streaming

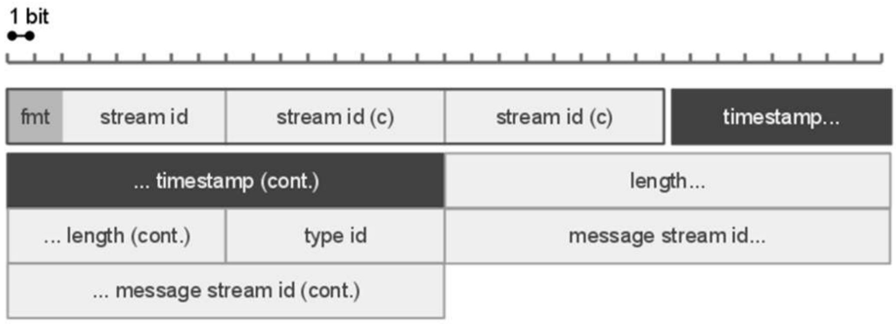
streaming video and audio use protocols that allow the transfer of data in **real time**. They break files into very small pieces and send them to a specific location in a specific order. These protocols include:

- Real-time transfer protocol (RTP)
- Real-time streaming protocol (RTSP)
- Real-Time Messaging Protocol (RTMP)
- Real-time transport control protocol (RTCP)

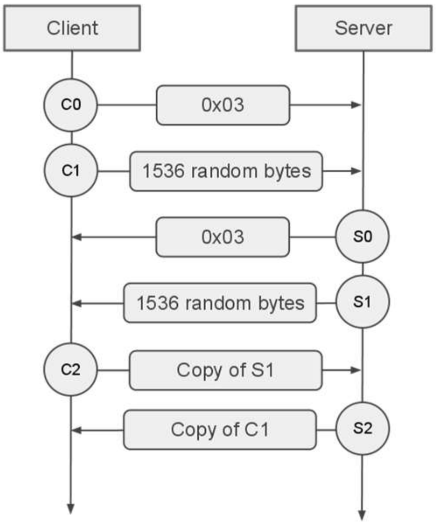
Real-Time Messaging Protocol

- The "plain" protocol which works on top of and uses **TCP port number 1935** by default.
- **RTMPS**, which is RTMP over a TLS/SSL connection.
- **RTMPE**, which is RTMP encrypted using Adobe's own security mechanism. While the details of the implementation are proprietary, the mechanism uses industry standard cryptographic primitives.[1]
- **RTMPT**, which is encapsulated within HTTP requests to traverse firewalls. RTMPT is frequently found utilizing cleartext requests on TCP ports 80 and 443 to bypass most corporate traffic filtering. The encapsulated session may carry plain RTMP, RTMPS, or RTMPE packets within.
- **RTMFP**, which is RTMP over UDP instead of TCP, replacing RTMP Chunk Stream. The Secure Real-Time Media Flow Protocol suite has been developed by Adobe Systems and enables end-users to connect and communicate directly with each other (P2P).

RTMP Packet Diagram

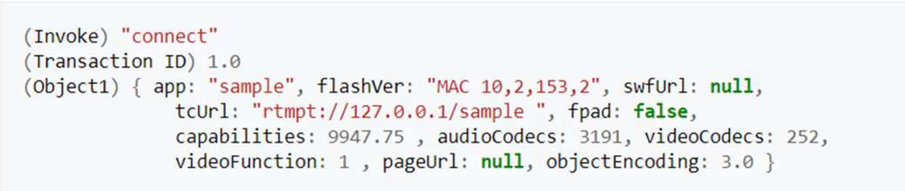


RTMP Handshake Diagram



Connect

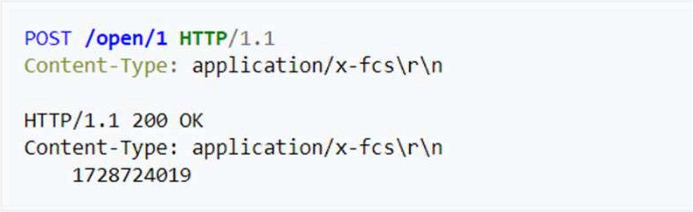
At this point, the client and server can negotiate a connection by exchanging **AMF** encoded messages. These include key value pairs which relate to variables that are needed for a connection to be established. An example message from the client is:



```
(Invoke) "connect"
(Transaction ID) 1.0
(Object1) { app: "sample", flashVer: "MAC 10,2,153,2", swfUrl: null,
             tcUrl: "rtmpt://127.0.0.1/sample ", fpad: false,
             capabilities: 9947.75 , audioCodecs: 3191, videoCodecs: 252,
             videoFunction: 1 , pageUrl: null, objectEncoding: 3.0 }
```

HTTP tunneling (RTMPT)

This refers to the HTTP tunneled version of the protocol. It communicates over port **80** and passes the **AMF** data inside HTTP **POST** request and responses. The sequence for connection is as follows:

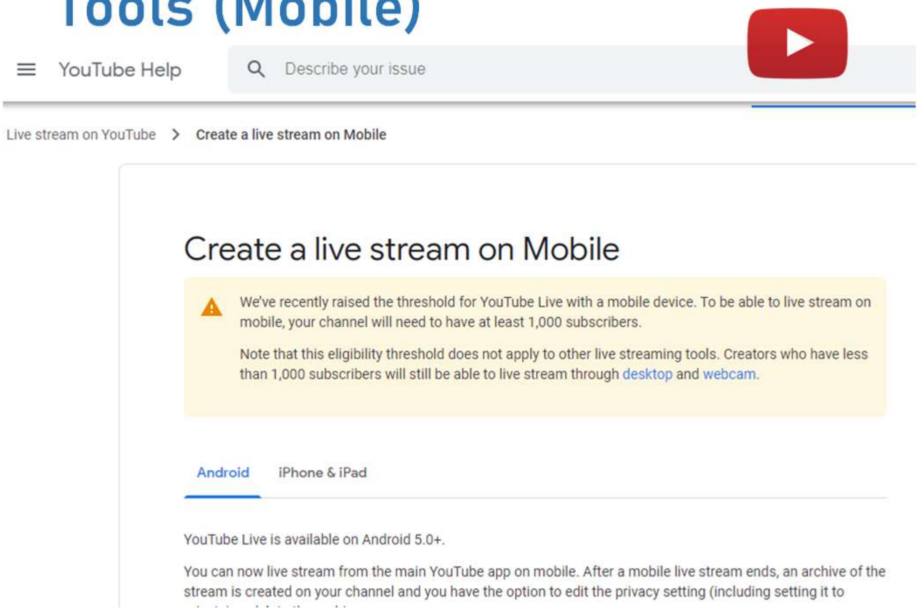


```
POST /open/1 HTTP/1.1
Content-Type: application/x-fcs\r\n

HTTP/1.1 200 OK
Content-Type: application/x-fcs\r\n
    1728724019
```

Tools

Tools (Mobile)



Create a live stream on Mobile

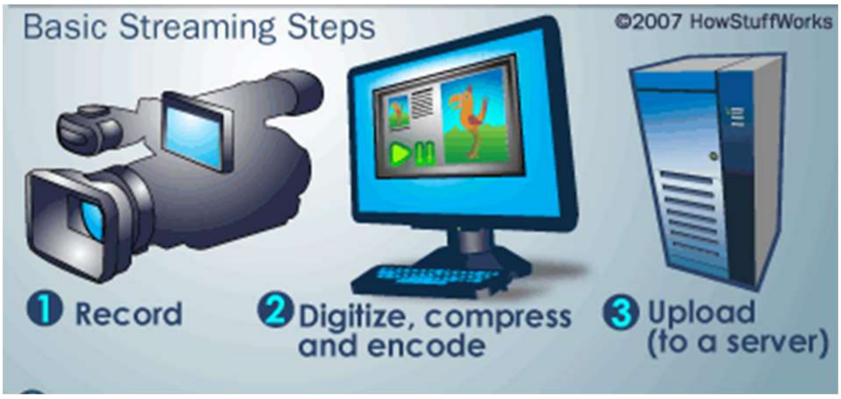
We've recently raised the threshold for YouTube Live with a mobile device. To be able to live stream on mobile, your channel will need to have at least 1,000 subscribers.

Note that this eligibility threshold does not apply to other live streaming tools. Creators who have less than 1,000 subscribers will still be able to live stream through desktop and webcam.

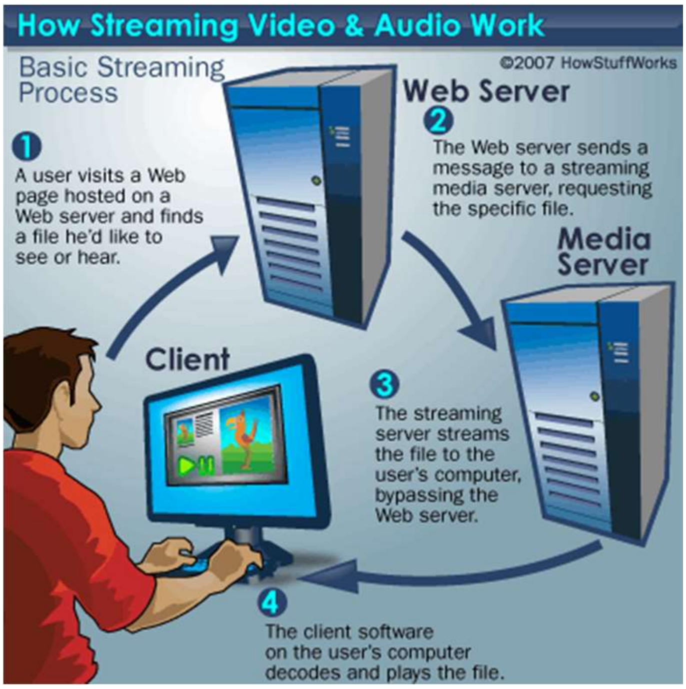
YouTube Live is available on Android 5.0+.

You can now live stream from the main YouTube app on mobile. After a mobile live stream ends, an archive of the stream is created on your channel and you have the option to edit the privacy setting (including setting it to

Creator



User



How Streaming Video & Audio Work

Basic Streaming Process

©2007 HowStuffWorks

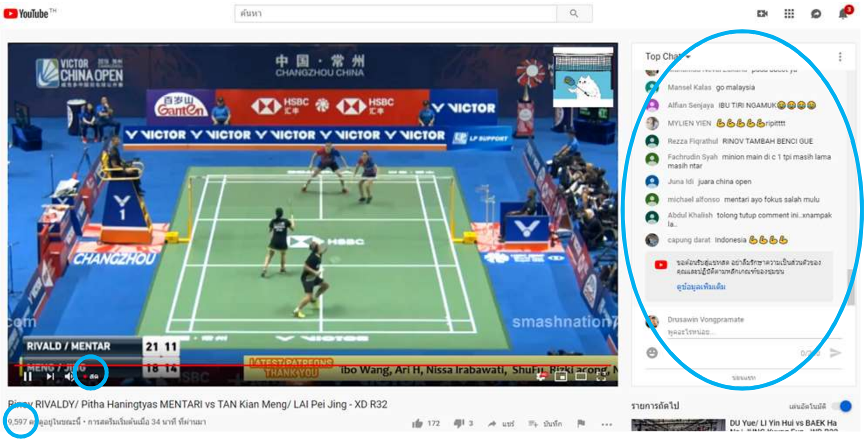
1 A user visits a Web page hosted on a Web server and finds a file he'd like to see or hear.

2 The Web server sends a message to a streaming media server, requesting the specific file.

3 The streaming server streams the file to the user's computer, bypassing the Web server.

4 The client software on the user's computer decodes and plays the file.

Example



Mansel Kalas go malaysia

Alfian Senjaya IBU TIRI NGAMUK😂😂😂😂

MYLIEN YIEN 💪💪💪💪💪ripitttt

Rezza Fiqrathul RINOV TAMBAH BENCI GUE

Fachrudin Syah minion main di c 1 tpi masih lama masih ntar

Juna Idi juara china open

michael alfonso mentari ayo fokus salah mulu

Abdul Khalish tolong tutup comment ini..xnampak la..

capung darat Indonesia 💪💪💪💪

ขอต้อนรับสู่แชทสด อย่าลืมรักษาความเป็นส่วนตัวของคุณและปฏิบัติตามหลักเกณฑ์ของชุมชน

ดูข้อมูลเพิ่มเติม

Drusawin Vongpramate

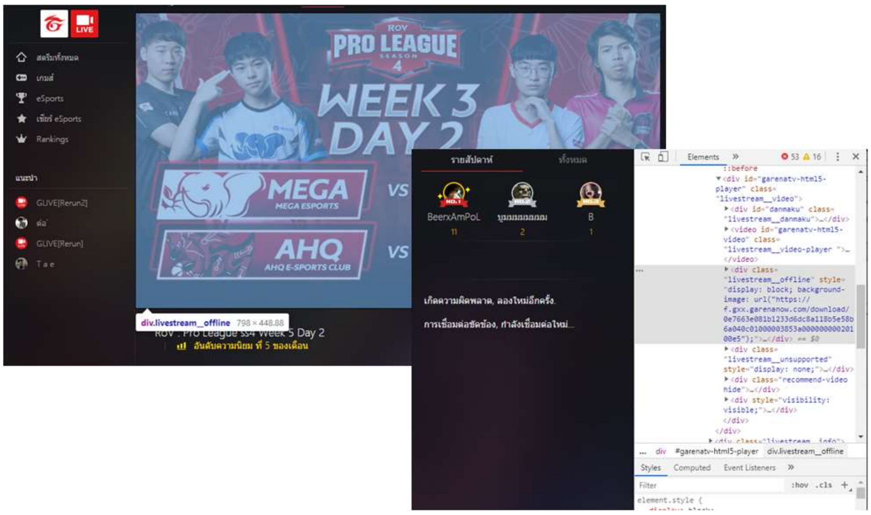
พูดอะไรหน่อย...

0/200

Rinov RIVALDY/ Pitha Haningtyas MENTARI vs TAN Kian Meng/ LAI Pei Jing - XD R32

9,597 คนดูอยู่ในขณะนี้ • การสตรีมเริ่มต้นเมื่อ 34 นาทีที่ผ่านมา

Example



ROV : Pro League ss4 Week 5 Day 2

อันดับความนิยม ที่ 5 ของเดือน

เกิดความผิดพลาด, ลองใหม่อีกครั้ง.

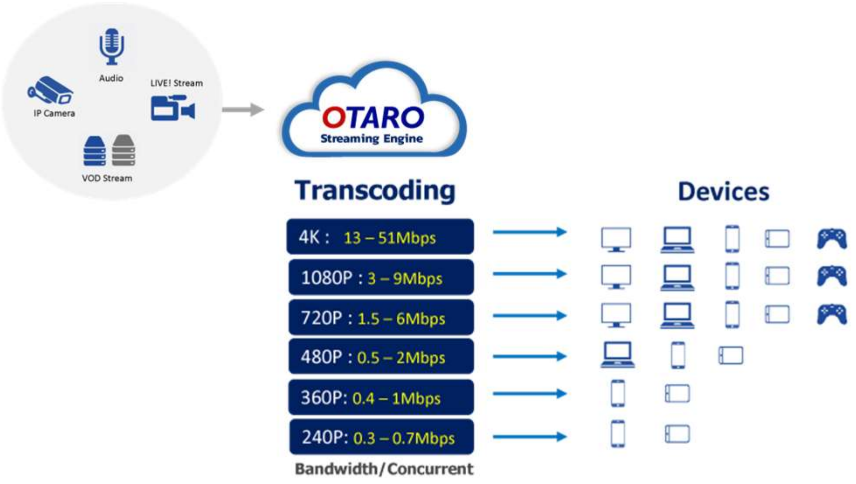
การเชื่อมต่อชัดข้อง, กำลังเชื่อมต่อใหม่...

```
::before
▼<div id="garenatv-html5-player" class="livestream__video">
  ▶<div id="danmaku" class="livestream__danmaku">…</div>
  ▶<video id="garenatv-html5-video" class="livestream__video-player ">…</video>
  ▶<div class="livestream__offline" style="display: block; background-image: url("https://f.gxx.garenanow.com/download/0e7663e081b1233d6dc8a118b5e58b6a040c01000003853a00000000020100e5");">…</div> == $0
  ▶<div class="livestream__unsupported" style="display: none;">…</div>
  ▶<div class="recommend-video hide">…</div>
  ▶<div style="visibility: visible;">…</div>
  </div>
</div>
▶<div class="livestream__info">
```

```
… div #garenatv-html5-player div.livestream__offline
```

```
element.style {
```

Cloud Streaming Service



4K : 13 – 51Mbps

1080P : 3 – 9Mbps

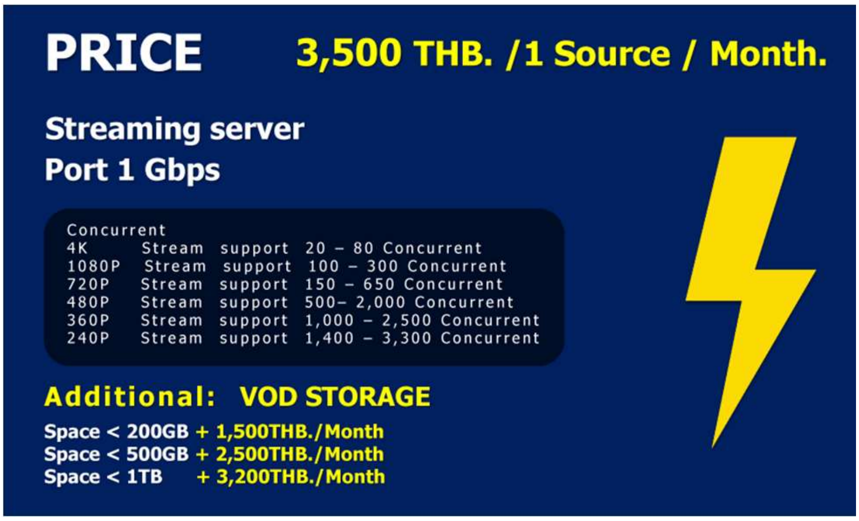
720P : 1.5 – 6Mbps

480P : 0.5 – 2Mbps

360P: 0.4 – 1Mbps

240P: 0.3 – 0.7Mbps

Cloud Streaming Service



PRICE **3,500 THB. /1 Source / Month.**

Streaming server
Port 1 Gbps

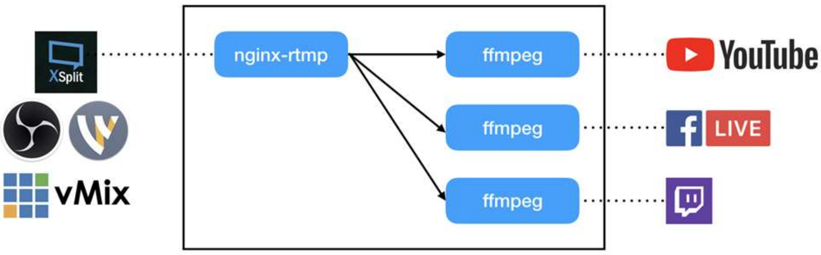
Concurrent			
4K	Stream	support	20 – 80 Concurrent
1080P	Stream	support	100 – 300 Concurrent
720P	Stream	support	150 – 650 Concurrent
480P	Stream	support	500– 2,000 Concurrent
360P	Stream	support	1,000 – 2,500 Concurrent
240P	Stream	support	1,400 – 3,300 Concurrent

Additional: VOD STORAGE

Space < 200GB + 1,500THB./Month
Space < 500GB + 2,500THB./Month
Space < 1TB + 3,200THB./Month

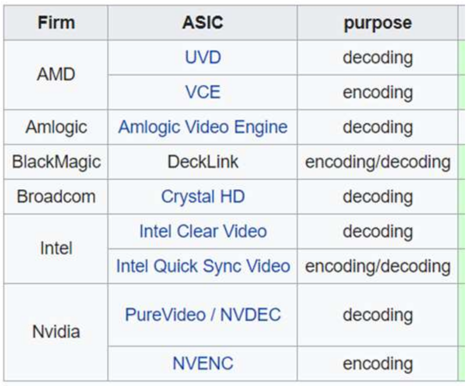
Restreaming

Upload a single stream and **simultaneously** rebroadcast to multiple other streaming destinations (e.g. Facebook, YouTube, Periscope, Twitch, Steam etc). Also broadcast to a custom server or any platform that accepts **RTMP** input.



FFmpeg

A free and open-source project consisting of a vast software suite of libraries and programs for handling video, audio, and other multimedia files and **streams**.



Firm	ASIC	purpose
AMD	UVD	decoding
	VCE	encoding
Amlogic	Amlogic Video Engine	decoding
BlackMagic	DeckLink	encoding/decoding
Broadcom	Crystal HD	decoding
Intel	Intel Clear Video	decoding
	Intel Quick Sync Video	encoding/decoding
Nvidia	PureVideo / NVDEC	decoding
	NVENC	encoding

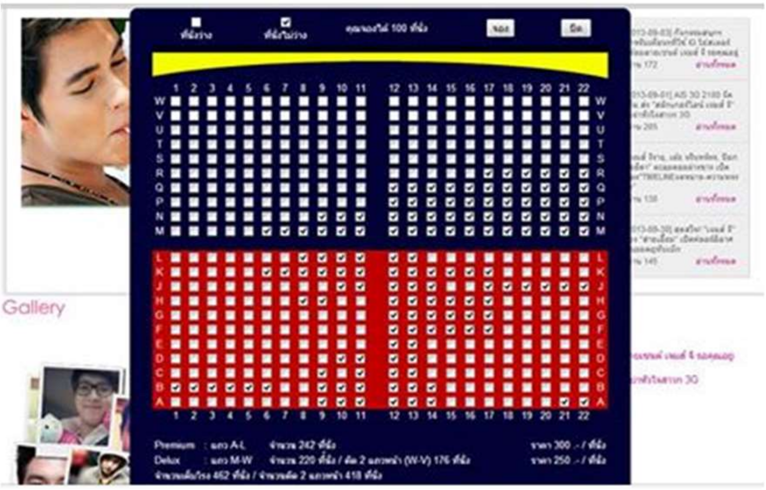
Example

```
docker run --rm --link nginx-rtmp:nginx-rtmp -d
jrottenberg/ffmpeg -i rtmp://nginx-rtmp/live/<your stream key>
-c copy -f flv
'rtmp://a.rtmp.youtube.com/live2/<youtube stream key>'
```

```
docker run --rm --link nginx-rtmp:nginx-rtmp jrottenberg/ffmpeg
-i rtmp://nginx-rtmp/live/sodsodnaja -c:a libfdk_aac -b:a 128k -
c:v libx264 -b:v 3000k -f flv -g 30 -r 30 -s 1280x720 -profile:v
baseline
'rtmp://rtmp-api.facebook.com:80/rtmp/facebook-stream-key'
```

Example

http://jirayu-home.com/



Gallery

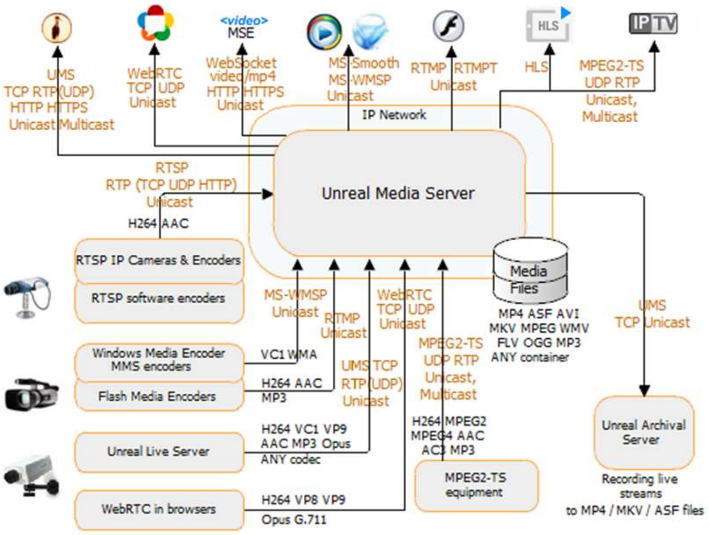
□ ที่นั่งว่าง ☑ ที่นั่งไม่ว่าง คุณจองได้ 100 ที่นั่ง จอง ปิด

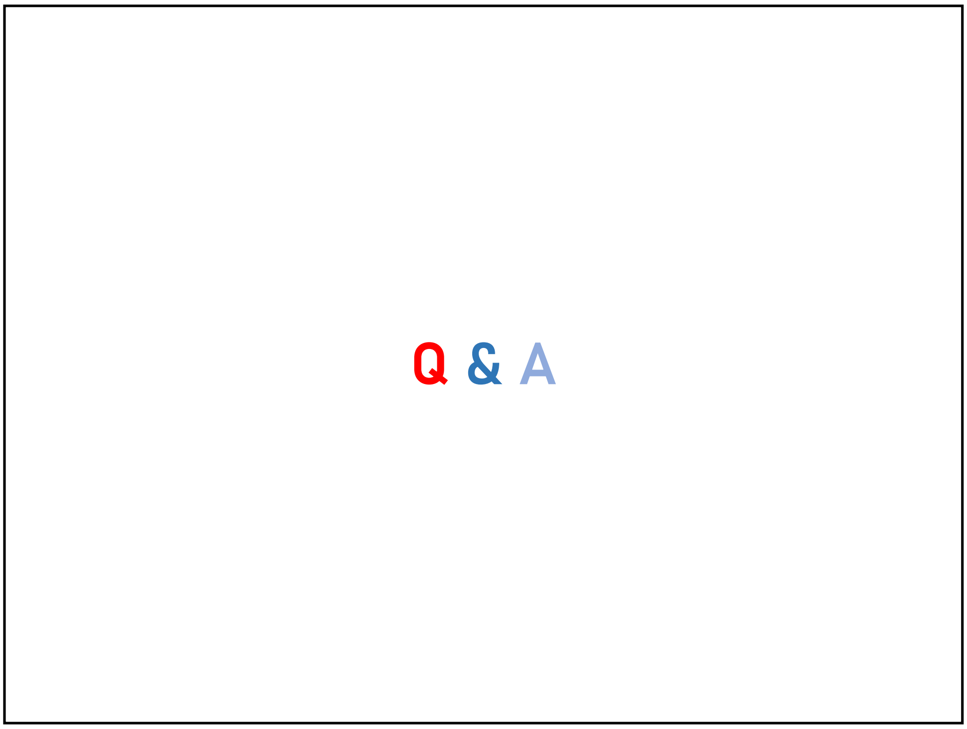
Premium : แถว A-L จำนวน 242 ที่นั่ง ราคา 300.- / ที่นั่ง

Delux : แถว M-W จำนวน 220 ที่นั่ง / ตัด 2 แถวหน้า (W-V) 176 ที่นั่ง ราคา 250.- / ที่นั่ง

จำนวนทั้งโรง 462 ที่นั่ง / จำนวนตัด 2 แถวหน้า 418 ที่นั่ง

Example





Q & A