

Term Project (ICN2021 Fall)

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Introduction

視頻串流



實況轉播



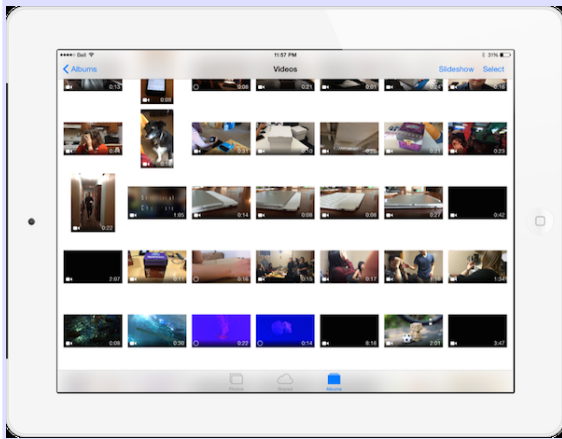
VR



網路遊戲



行動裝置同步雲端



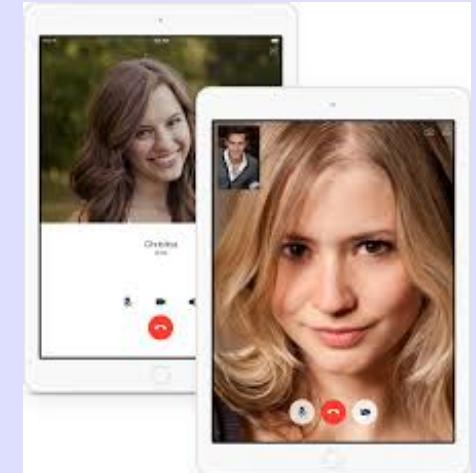
運動賽事



AR/MR



視訊聊天



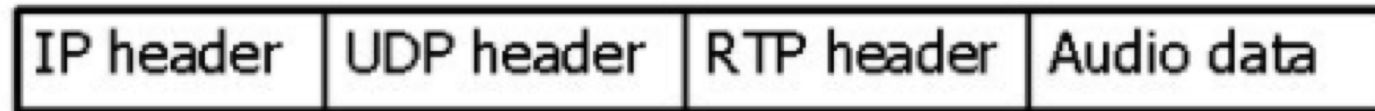
Objectives

- In this project, you're expected to:
 - Implement a video streaming application with the real-time streaming protocol (RTSP)
 - RTP based on UDP to send packet
 - Don't have to be live streaming
 - Can't include any existing library in your code
 - E.g. Python: rtsp library
 - Feel free to include any feature into your project
 - Security
 - ML/DL
 - Etc.

Real-time Transport protocol

■ RTP

- ☐ Header for multimedia
- ☐ Runs on top of UDP
- ☐ Media chunk in RTP packet, RTP packet in UDP segment



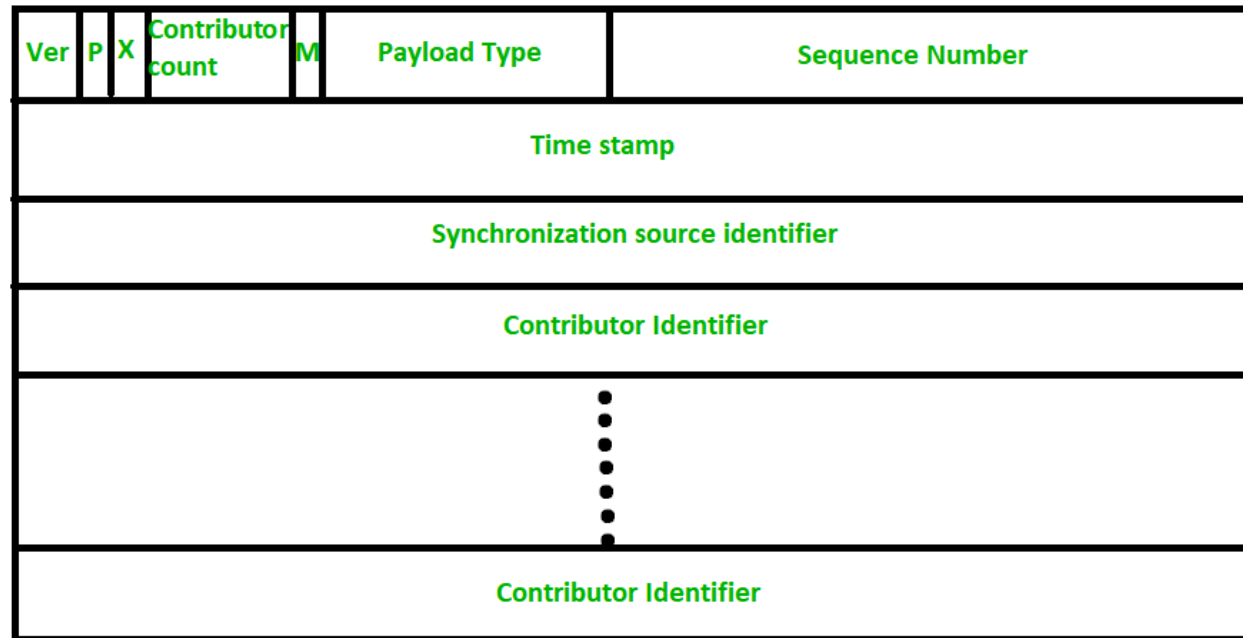
- ☐ One to one, one to many, many to many

■ Scenario -> Audio and video conference

- ☐ Two RTP sessions, one for audio and the other for video
- ☐ Participate audio, video or both

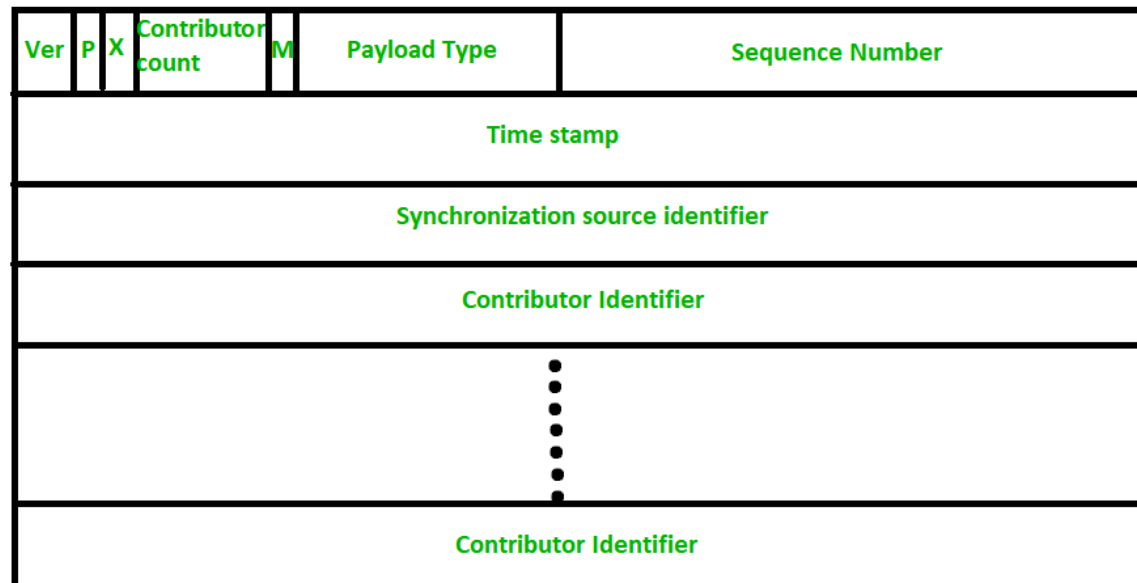
RTP format

- Ver (2 bits): defines version number. The current version is 2
- P (1 bit): denotes presence of padding with value of 1 or 0
- X (1 bit): indicates an extra extension header between data and basic header with value of 1 or 0
- Contributor count (4 bits): indicates number of contributors



RTP format – cont.

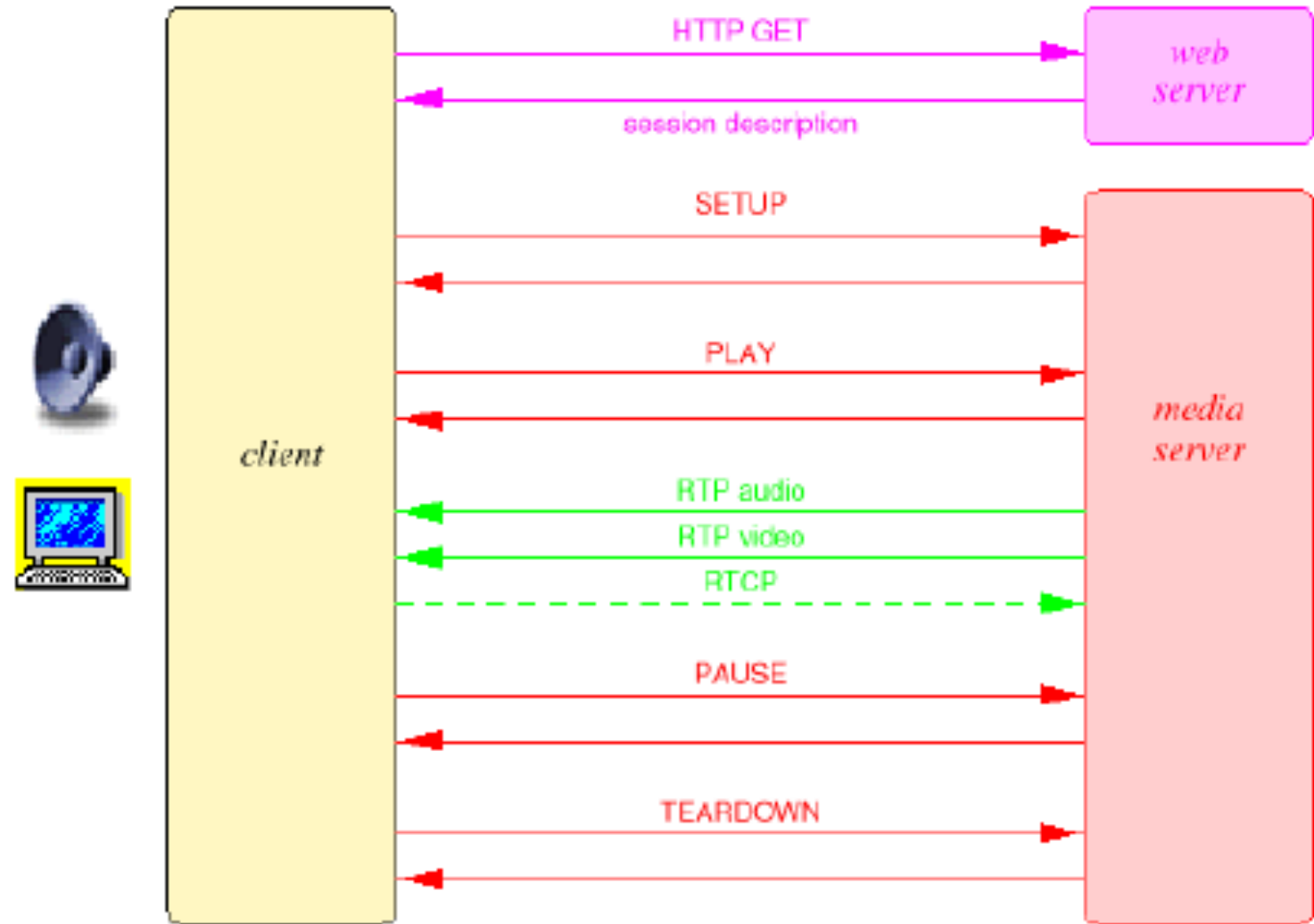
- M (1 bit): used as end marker by application to indicate end of its data
- Payload types (7 bits): indicates type of payload
- Sequence numbers (16 bits): serial numbers to RTP packets
- Time Stamps (32 bits): marks relationship between times of different RTP packets
- Synchronization Source Identifier (32 bits): identify and define the source
- Contributor Identifier (32 bits): source identification if there is more than one source



RTSP

■ Four commands

- ☐ SETUP
- ☐ PLAY
- ☐ PAUSE
- ☐ TEARDOWN



進行方式

- 期末demo並繳交報告(1/21)
- 每3人一組，共存共榮，榮辱與共。
 - <https://docs.google.com/spreadsheets/d/1HO9y6Af6tK7oOEJpk9W0bfdAJVutoITUd7s52j5rlpw/edit#gid=0>
- Demo or Contest: By video, 錄影上傳至雲端
 - https://drive.google.com/drive/folders/1_sqbqFHL5hujz9T4BVHp0vp5Cy3ikXII?usp=sharing
- Report:
 - Ceiba

Grading

- Required Tasks: (60%)
 - Implementation of RTP and RSTP (40%)
 - Implementation of video streaming (20%)
- Demo: (10%)
- Report: (30%)
- Bonus: (10%)
 - Any innovation

Thanks for your listening.

Any questions?