STREAMING ANALYTICS USING CMCD AND CMSD

Final Presentation

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Open Distributed System | SS 22

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Problem Statement

- Recap on problem statement
- Approached solution: Use of CMCD and CMSD specification

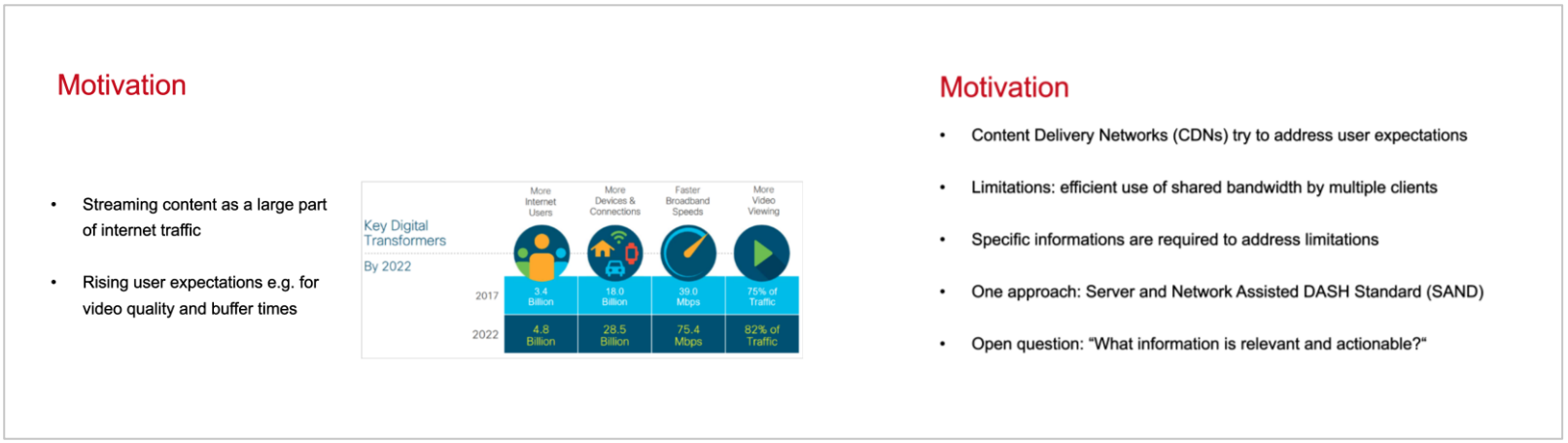


Fig 1. Screenshot from workshop 2

Recap on second workshop

- NUStreaming Project
  - CMCD
  - CMSD
- Unified Media – CMSD
- Comparative Evaluation

NUStreaming CMSD

- Used CMCD implementation given by dash.js client
- Server and client implementation
- Result: Eliminates unnecessary downshifting while reducing both the rebuffering rate and duration

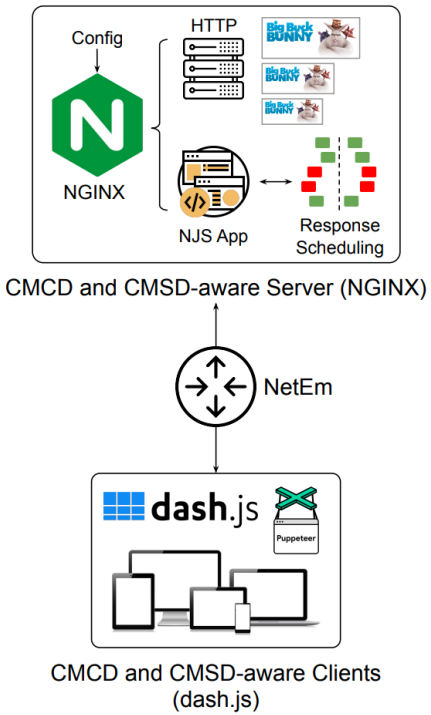


Fig 2. The implemented CMCD-CMSD System (Lim, Akcay, Bentaleb, Begen & Zimmermann, 2022)

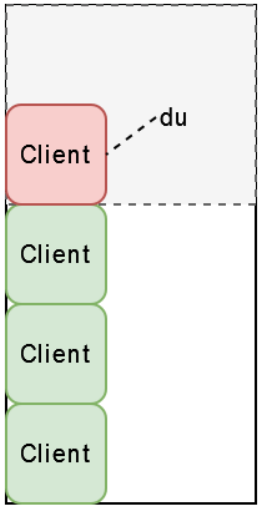
What use cases we implemented?

- Two main Use-Cases were selected
- Use-Case 1: Switching between multiple servers for load-balancing
  - Initiated by server with sending of **du** flag
- Use-Case 2: Limiting the video-bitrate on the client
  - Initiated by server with sending of **mb=*value*** flag

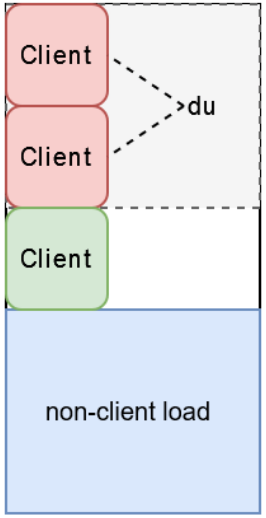
Scenario 1 – Switching / Server-Overload

- Each client provokes a given server load (*demo: 20%*)
- Server has a threshold, after which it is considered as overloaded (*demo: > 60%*)
- Server can be overloaded due to another reasons, also by smaller amount of clients
- If a new client will provoke an overload, it will be asked to switch to another server (1)
- If the server is overloaded, it will reduce the number of clients until load becomes normal (2)

(1)

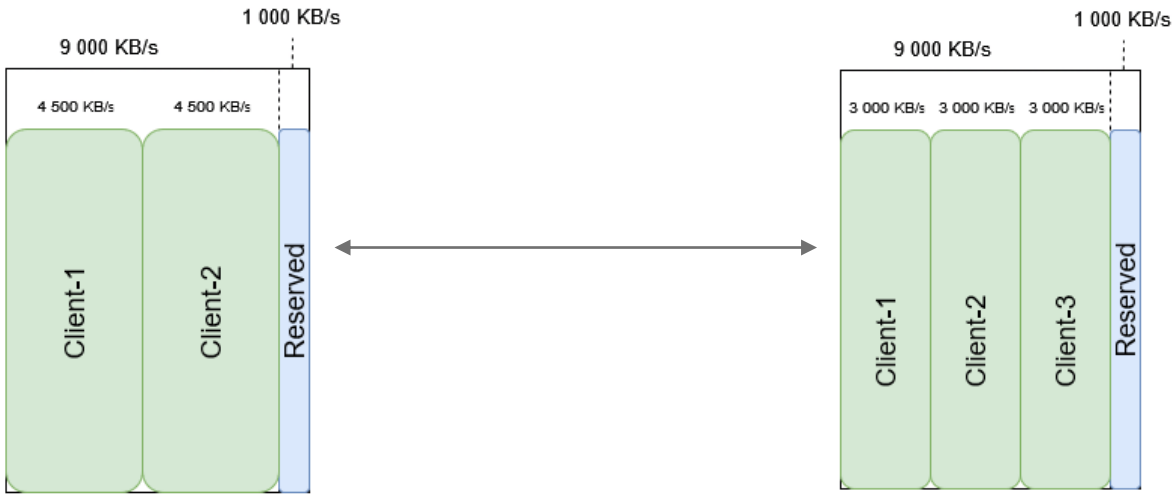


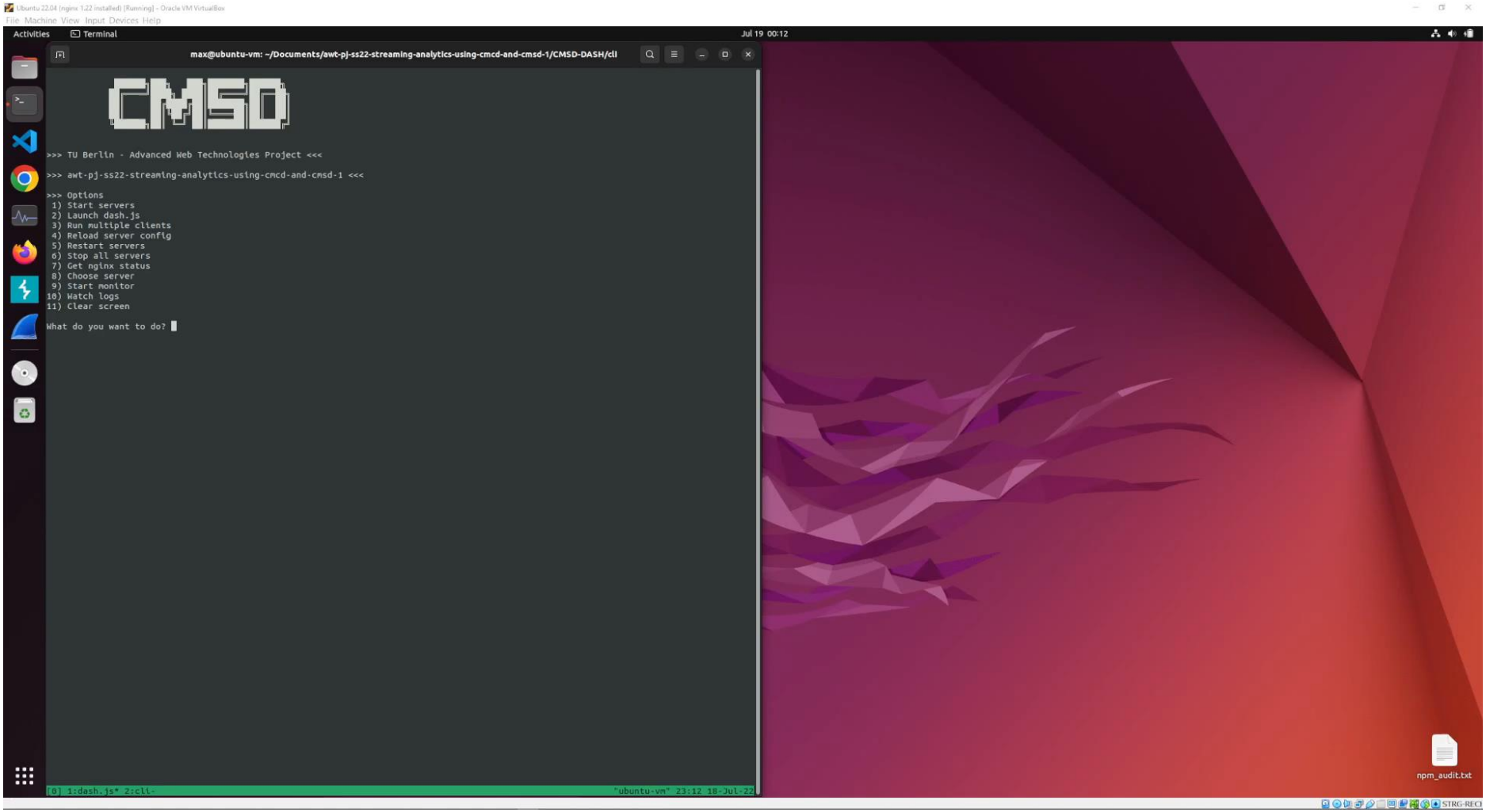
(2)



Scenario 2 – Bitrate adaptation

- Server bitrate-throughput is limited (*demo: 10 000 KB/s*) and is partially reserved (*demo: 1 000 KB/s*)
- The rest of the throughput is equally divided between all clients
- If a new client arrives, the bitrate-limit for all other clients has to be reduced
- If one of the clients leaves the server, bitrate of all other clients should be also adapted




Ubuntu 22.04 (nginx 1.22 installed) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Terminal
Jul 19 00:12
max@ubuntu-vm: ~/Documents/awt-pj-ss22-streaming-analytics-using-cmcd-and-cmsd-1/CMSD-DASH/cli
CMSD
>>> TU Berlin - Advanced Web Technologies Project <<<
>>> awt-pj-ss22-streaming-analytics-using-cmcd-and-cmsd-1 <<<
>>> Options
1) Start servers
2) Launch dash.js
3) Run multiple clients
4) Reload server config
5) Restart servers
6) Stop all servers
7) Get nginx status
8) Choose server
9) Start monitor
10) Watch logs
11) Clear screen
What do you want to do?
[0] 1:dash.js* 2:cli-
"ubuntu-vm" 23:12 18-Jul-22
npm_audit.txt

Last Steps

- Cleanup code
- Add comments
- Write final Documentation
  - Paper
  - Manual

References

- Bentaleb, A., Lim, M., Akcay, M. N., Begen, A. C., & Zimmermann, R. (2021, July). Common media client data (CMCD) initial findings. In Proceedings of the 31st ACM Workshop on Network and Operating Systems Support for Digital Audio and Video (pp. 25-33).
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