

Workshop on Adaptive Media Transport

June 14 and 15th, 2012 – Cisco Systems, San Jose, CA

Basic Logistics Information

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|---------------|---|-----------------|--------------------|
| Location | Cisco Systems, Building SJC-O 1 st Floor, Chess Conference Room 10 West Tasman Dr. San Jose, CA 95134 | | |
| Dates & Times | June 14th, 09:00-21:30, June 15th, 09:00-18:30 | | |
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| | Dave Oran (Co-chair) | +1 978 764 1176 | oran@cisco.com |
| | Ali C. Begen (Co-chair) | +1 408 332 2276 | abegen@cisco.com |
| Web Site | http://www.employees.org/~acbegen/abr_workshop_2012/ User: abr, password: abr2012 | | |
| Email List | abr_workshop_2012@external.cisco.com | | |

Agenda for Day 1 – June 14th

9:00-9:30 Introduction

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| 9:00-9:10 | Dave Oran, Cisco Workshop purpose, goals, ground rules, agenda overview |
| 9:10-9:30 | All Introductions, brief interest statements |

9:30-11:00 Talks

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|-------------|---|
| 9:30-10:00 | Ion Stoica and Hui Zhang, Conviva A Real-Time Big Data Approach to Video Quality Control |
| 10:00-10:30 | Bill Ver Steeg, Cisco Introduction to the Workshop – What Challenges does the Industry See in the Emerging ABR World? |
| 10:30-11:00 | Alon Bernstein and Sangeeta Ramakrishnan, Cisco Cable QoS Impact on ABR |

11:00-11:15 Break

11:15-12:30 Panel Discussion: Content Generation Issues in Adaptive Streaming

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| Leader: Christian Timmerer | <i>One of the main requirements for the dynamic, adaptive streaming over HTTP is to leverage existing infrastructures such as servers, proxies, and caches. MPEG DASH does not require dedicated server components and can</i> |
| Panelists: | |

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James Au, Cisco
Jeff Goldberg, Cisco
Mahesh
Viveganandhan, Cisco

be easily deployed using existing HTTP servers such as Apache or Internet Information Services. Nevertheless, content generation issues remain which will be discussed in this panel. Topics include content generation issues for adaptive streaming in live and on-demand use cases and, specifically, pros and cons of the segment and subsegment approaches introduced within MPEG DASH. Furthermore, segment size and duration seems to be critical including support for variable bitrate encoding. The provisioning of the manifest file (MPD) and appropriate update mechanisms (i.e., in live scenarios) are also within the scope of content generation as well as guidelines how to form adaptation sets and representations for the use cases in question. Finally, business-related topics such as dynamic ad insertion shall be discussed also. Additional topics of interest are separate audio/video/subtitles/etc. or multiplexed, support for profiles, codecs, MPD size, MPD modularity, HTML5 codec problem.

12:30-13:30 Lunch Break (Lunch provided)

13:30-15:30 Talks

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|-------------|---|
| 13:30-14:00 | Junchen Jiang, CMU On Performance Issues under Conditions of Multiple Bitrate-Adaptive Streams |
| 14:00-14:30 | Josh Gahm and Zhi Li, Cisco Understanding Instability in Competing ABR Clients |
| 14:30-15:00 | Saamer Akhshabi and Constantine Dovrolis, Georgia Tech Instability Problems in HTTP Adaptive Video Streaming and a Traffic-Shaping Solution |
| 15:00-15:30 | Te-Yuan Huang and Ramesh Johari, Stanford Understanding Rate Adaptation Algorithms in HTTP-Based Video Streaming Services |

15:30-15:45 Break

15:45-17:15 Talks

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|-------------|--|
| 15:45-16:15 | Joerg Ott, Aalto University and Colin Perkins, University of Glasgow Content- and Cache-Aware TCP: Delegating Transfers to the Net |
| 16:15-16:45 | Tomas Kupka, Simula Research Lab |

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| | TCP and Live Adaptive HTTP Segment Streaming |
| 16:45-17:15 | Ashok Narayanan, Cisco |
| | Caching Interference with ABR Video |

17:15-18:45 Talks

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|-------------|---|
| 17:15-17:45 | Babu Suryanarayanan, Akamai |
| | Ingesting Linear Streams for Scalable and Reliable Adaptive Delivery |
| 17:45-18:15 | Yago Sanchez, Fraunhofer |
| | Content-Aware LTE Radio Resource Management for HTTP-Streaming |
| 18:15-18:45 | Kent Leung, Cisco |
| | Handling Adaptive Bitrate Streaming in a CDN Federation |

18:45-19:30 Free Time

19:30-21:30 Dinner

Giovanni's Pizza

Address: 1127 N Lawrence Expressway & Lakehaven, North of 101
Sunnyvale, CA 94089

Telephone: (408) 734-4221

URL: <http://www.giovanisnypizza.com/>

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Agenda for Day 2 – June 15th

9:00-11:00 Talks

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| 9:00-9:30 | Lorenzo Granai, Cisco Monitoring ABR Flows inside the Network |
| 9:30-10:00 | John Schlack, Cisco Managing Bandwidth Reservations on Service Provider Networks for ABR Streams |
| 10:00-10:30 | Fred Baker, Cisco Buffer Bloat! |
| 10:30-11:00 | Martin Ellis and Colin Perkins, University of Glasgow Modeling Packet Loss in RTP-Based Streaming Video for Residential Users |

11:00-11:15 Break

11:15-12:30 Panel Discussion: Modeling and Measuring QoE in Adaptive Streaming

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|---|--|
| Leader: Ali C. Begen Panelists: Alexander Eichhorn, Simula Research Lab Mark Watson, Netflix Yinian Mao, Qualcomm Atif Faheem, Cisco | <i>One of the primary goals in adaptive streaming is to improve QoE of the viewers. To quantify the gain in QoE, we need to model it and measure it through server and/or client-side measurements. However, what kind of a QoE model should we use? How can we capture shorter buffering and improved responsiveness in this model? Shifting among representations that have potentially different resolutions and/or bitrates poses a unique challenge as the quality will change accordingly. What model could capture such dynamics? Should the adaptation algorithms take such a model into account? If yes, how?</i> |
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12:30-13:30 Lunch Break (Lunch provided)

13:30-15:00 Talks

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|-------------|---|
| 13:30-14:00 | Daniel Havey, UCSB Advanced Transport Mechanisms with Session-Layer Data Protection |
| 14:00-14:30 | Varun Singh, Aalto University Predictive Buffering for Streaming Video in 3G Networks |
| 14:30-15:00 | Ozgur Oyman, Intel |

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Optimizing HTTP Adaptive Streaming for Enhanced Service Capacity and QoE

15:00-15:15 Break

15:15-16:30 Panel Discussion: Improvements on the Transport Protocols

Leader: Thomas Stockhammer

Panelists:

Srinivasa Somayazulu, Intel

Mike Luby, Qualcomm

Kevin Fall, Qualcomm

Dave Oran, Cisco

The H in DASH stands for HTTP. But what does “over HTTP” mean? Is it restricted to “HTTP/TCP”? The panel will discuss the delivery of DASH content and will look into the benefits of HTTP as a transport protocol and into potentials improvements for delivering DASH content. What about QoS? What about using multicast/broadcast distribution? Can we improve TCP and HTTP implementations and/or protocols? Do we need monitoring and bandwidth measurement protocols? What about secure delivery? What is the role of different SDOs in this area?

16:30-18:30 Talks

16:30-17:00

Scott Labrozzi, Cisco

The Use of Adaptive Transport Streams (ATS) in ABR Format Preparation and Delivery

17:00-17:30

Christian Timmerer, Klagenfurt University

DASH-JS: Using DASH within the Web Browser Utilizing HTML5 and JavaScript

17:30-18:00

Steve Workman, Mozilla

Mozilla's Implementation of DASH in Firefox: Goals, Progress and Future Work

18:00-18:30

Thomas Stockhammer and Mike Luby, Qualcomm

Improvements of Live Services Based on DASH

18:30

END